

The Iron Age

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Modern Methods of Rail Manufacture and the Quality of Steel Rails.

The manager of one of the leading rail mills in the country writes to us as follows: The system of direct rolling seems to be in the direction of giving greater density to steel rails than the earlier custom of reheating and rolling—that is to say, with ingots having a sectional area of from 200 to 240 inches, taken from the furnace and rolled direct into rails having a sectional area of from 7 to 9 inches, and which is now our custom. Being rolled into lengths of 120 feet without any intermediate reheating, the rails, with the rapid cooling that is taking place during the rolling, however rapidly it may be done, undergo in a measure a system of cold rolling that certainly must add to the density of the bar, which is finished at a medium yellow heat. Under the system of reheating and rolling the steel is finished at a little below a white heat, and the steel is certainly at a very soft heat when it is finished. In either case, however, it is rolled from the same sized ingots, and the latter are certainly larger in area than was the common practice 10 years ago, the railway bar thereby receiving really more work than was common at that time. I have no doubt that at some works there has been experimenting with high silicon pig, as a substitute for spiegeleisen, and there is also now being used ferromanganese in the place of spiegeleisen. In the early history of the manufacture of steel rails in this country spiegeleisen contained from 10 to 12 per cent. of manganese, giving, say, $\frac{3}{4}$ of 1 per cent. of manganese in the rail as the common practice. Now, the higher grades of spiegeleisen and ferromanganese, even to 80 per cent. ferro, are being used, giving from $1\frac{1}{4}$ to $1\frac{1}{2}$ per cent. of manganese in the finished railway bars. Just how far this

experimenting being done it is certainly in the direction of arriving at better results rather than poorer. There is much in the detail of railway construction and maintenance that is no nearer perfection at this time than is the manufacture of steel rails.

The New Mining Plant of the Dickerson Mine.

Mr. J. M. Searle, chief engineer of the Musconetcong Iron Works, sends to the *Dover Iron Era* the following account of the new mining plant of the well-known Dickerson Mine, one of the leading iron concerns of New Jersey:

The engines were built by David Clark at the L. V. R. R. shops, Hazleton, Pa., and by the direction of Mr. I. P. Pardee. The chief feature of interest in these en-

pressure on the piston is enormously different at the opposite ends of the stroke, and when, as is the case with all slow-speed engines, the pressure on the crank is nearly the same with this, the engine is driven by a succession of separate impulses which are in the highest degree unfavorable to the permanent good condition of the engine. The main distributing-valve in these engines has a constant travel, and does not in any way effect the control of the cut-off or the regulation of speed. This constant travel produces a constant lead, a constant compression and a constant release. The amount of compression is made sufficient to insure smooth running of the engine. By a correct proportioning of ports and port openings the finest possible admission and steamlines have been achieved, and at the same time, by the "almost" instantaneous action of the cut-off-valve, a perfect cut-off and expansion line is the re-

so that with the condenser in operation the steam would not drop below the atmospheric line until the cylinder was open to the exhaust.

We have adopted the constant running second motion system for hoisting, and, of course, the reversing gear is omitted. The hoisting car or cage is lowered by means of a friction brake and elevated through the intervention of a friction clutch. This is the most economical system in the consumption of fuel, as it can be worked by a single engine and the engine can be proportioned for its load and its valve given an economical point of cut-off. The air compressor was built by the Morris County Machine and Iron Co., of Dover, and is one of the largest and best machines of their make, and there is none better of any make. In fact, we think the Bennett valve which is used on these machines superior to all others. The

where they leave the boiler must result in loss. For this reason we think there is no advantage in long boilers. The trouble is nearly always that there are not enough boilers to do the work, and what boilers there are must be run to their utmost capacity, regardless of the temperature of the products of combustion at the stack.

The Uehling Blast-Furnace Charging Apparatus.

The tendency of improvements in modern blast-furnace construction has been (with the exception of the apparatus for heating the blast) almost exclusively in the direction of increased capacity. The marked success attained has naturally resulted in a very keen competition, so that in the future the minor sources of economy must also be

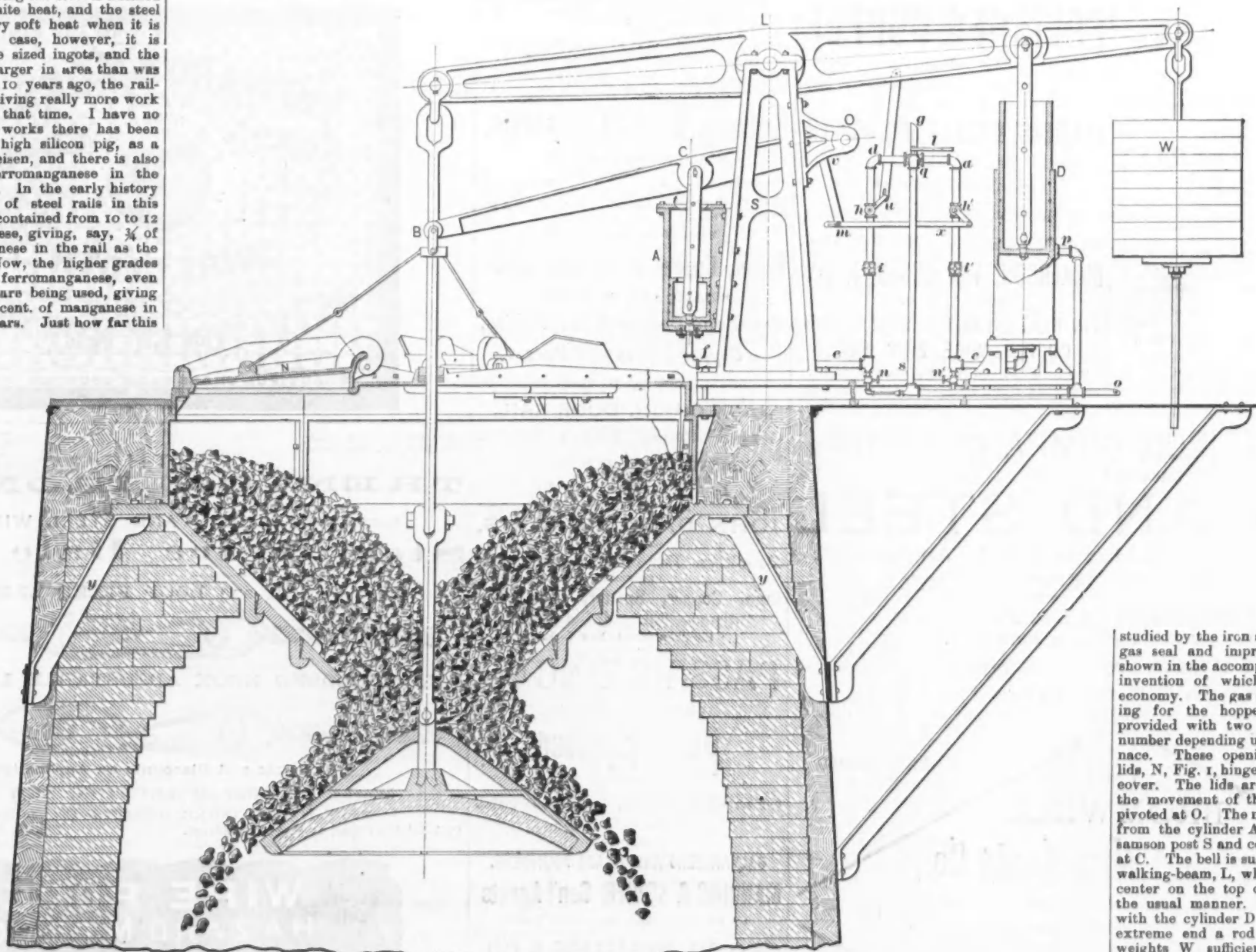


Fig. 1.

THE UEHLING BLAST-FURNACE CHARGING APPARATUS.

may affect the grain of the steel, as would be shown by a cold fracture, could be readily determined. I think, however, it is true that railway engineers differ themselves as to the physical tests they demand of the manufacturers, all of whom are united on one thing, and that is to get the best possible results, so far as the service is concerned, that the rail is expected to perform. But where one company insist upon soft rails, their specifications being such that if you go above or below the chemical limits specified by them the rails are rejected—in such case, however, the railway company assume all risks and ask no guarantee as to service—another company, supposed to be equally conservative and with equal ability in their management, ask for rails as hard as the manufacturer dare make them and guarantee results, and then insist on having them harder, and they then assume all risks and ask no guarantee. These are two extreme cases, which are both true in practice. The manufacturer, then, has the limits between these two extremes, and is "subject to criticism all along the line if his work does not perform all that is expected of it by all parties concerned." From this it will be seen that it is not entirely in the province of the manufacturer to do what he may believe to be best for the interests of the party purchasing from him, and yet he is subject to the severe criticisms and fault-finding of the parties with whom he deals. I do not believe there are any works in this country manufacturing steel rails that are not doing their utmost to give to the purchaser of their products the very best material it is possible for them to produce, and if there is any

gines is the valve arrangement, and to this, accordingly, special attention is directed. Both engines are provided with Clark's patent independent cut-off valve, which rides on the back of the main valve and moves in an opposite direction to the main valve, thus effecting the cut-off with the least possible amount of wire drawing. Both main and cut-off valves are driven by fixed eccentrics, and are what is termed "positive-motion" valves. There are quite a number of points in favor of positive-motion valves (for engines whose duty is as irregular as the duty of a pumping engine must be) over the relief system as used in all makes of the Corliss engine. First, it operates with uniform precision on both strokes and equally well at any speed. There is no possibility of uncertain or irregular action ever arising, as of the steam following through the entire stroke on account of the cut-off missing, or of blowing through on account of failure of the valve to close. Second, the velocity of the valves while opening and closing increases directly with the increase in the speed of the engine, while a liberated valve would close no more swiftly at 200 revolutions per minute than it would do at two. The later in the stroke the steam is cut off the more rapid the speed of the piston becomes. A liberated valve makes no compensation for this, but the valve has only the same closing speed at the latest that it has at the earliest point of cut-off. In Clark's gear, on the contrary, the higher the speed the swifter the closing movement, so that equally good cut-off is insured at all speeds. Why we did not use a variable automatic cut-off: In an automatic cut-off engine the

sult. An important problem met in designing any engine, and one which is too often overlooked, is how to avoid an objectionable amount of waste room in clearance and ports. Mr. Clark has succeeded in reducing the waste room in these engines to a minimum. The compression will fill this waste room at from one-half to the whole of the initial pressure, the latter avoiding loss from this cause almost entirely.

Our engines both exhaust into one of L. Schutte & Co.'s induction condensers, which is located at the collar of the perpendicular shaft and passes all the water that is pumped from the mine through its tail-pipe into the tunnel, 35 feet below the surface. It is a matter of surprise that this valuable adjunct to the steam engine is so little understood and employed among the mines of Morris County. Under ordinary circumstances a good condenser will effect a saving of from 25 to 30 per cent. of the fuel used; or, stated otherwise, it will furnish 25 to 30 per cent. additional power without the cost of an additional dollar for fuel. The application of a condenser should be judiciously made, however, or the results may be disappointing. Thus with loads already too light the condenser would be of little value. For instance, with a terminal pressure of less than 5 pounds (non-condensing) above atmosphere a condenser would fall short of its full efficiency, for it would create a vacuum on the steam side of the piston during a portion of its stroke on account of the engine not using steam enough to keep the pressure up to the atmosphere (on the steam side) to the end of the stroke. The remedy would be in this case to reduce the size of cylinder

compressor is driven from the pumping engine, and as we have a high-duty pumping engine our compressor becomes at once a high-duty machine, deriving all the benefits of a high grade of expansion and a good vacuum, instead of (as is the custom in Morris County) being a high-pressure machine taking steam for two-thirds of the stroke and hammering away against any amount of back pressure.

Of course it should be understood that economy in the use of fuel does not depend entirely on the high duty of the engine, but that high boiler duty is an equally important factor in ultimate fuel economy. The engine itself is chargeable with only a certain part of the results. We may predict very closely what its performance will be under any given conditions, and with the indicator we can accurately determine that performance, but such was not the case with the boiler. Careful tests of the boiler may be made, but they will only determine results, without locating the cause of any deficiency. We must therefore fall back on our own judgment, and if we have been close observers we shall have no trouble in erecting boilers that will be high-duty boilers. Our experience seems to warrant us in using good return tubular boilers with length of tubes about 50 times their diameter, and boiler set in double walls, so as to have an air space all around sides, top and bottom, with a good circulation of water (which we maintain by a special device), and not fired stronger than is necessary to keep the escaping gases at a temperature not over 50° or 60° in excess of the steam temperature. Any attempt to reduce the gases below this at the point

studied by the iron smelter. The automatic gas seal and improved hopper and bell shown in the accompanying drawings is an invention of which the prime object is economy. The gas seal consists in a covering for the hopper of a blast furnace, provided with two or more openings, the number depending upon the size of the furnace. These openings are supplied with lids, N, Fig. 1, hinged near the center of the cover. The lids are opened and closed by the movement of the lever B C O which is pivoted at O. The moving power is derived from the cylinder A which is bolted to the samson post S and connected with the lever at C. The bell is suspended from a lever or walking-beam, L, which is pivoted near its center on the top of the samson post S in the usual manner. This beam is connected with the cylinder D and has attached to its extreme end a rod which carries counterweights W sufficient to overbalance the weight of the bell and the stock which it may be called upon to carry. The samson post and cylinder D are both firmly bolted to the heavy bed-plate which rests on and is bolted to the sheet-iron work of the stack and the top of the hopper, which is in turn supported by brackets, as shown.

The motive-power in the design shown is steam, which enters through the pipe g, and is admitted to either of the two cylinders by moving the lever I of the four-way valve g. The pipes leading to the cylinders A and B are provided with the automatically operated valves h and h', and the globe-valves i and i', by which the flow of steam can be regulated as the pressure may require, so that the desired piston speed can always be secured. The cylinders are of the simplest possible construction, open at one end, and have neither piston-rod nor stuffing-box, connecting-rods being attached directly to the bottom of the hollow pistons. The piston in D is the full length of the cylinder, which secures the exclusion of dust and grit when at rest. This in regular working always occurs when the bell is up and the piston down. The piston in cylinder A is also of liberal length; its position of rest is at the top of the cylinder, where it takes seat against the annular projection of the head t, against which it is held by the steam pressure, securing a tight joint. The pistons are provided with shallow grooves to retard the passage of steam; packing rings are entirely dispensed with.

The operation of the automatic seal is as follows: The illustration Fig. 1 shows the seal closed and the hopper in the act of discharging the stock into the furnace. The lever I is turned so as to admit steam into the cylinder D, through a h' i' c, the piston has been forced up and the bell lowered, as shown. The upward motion of the piston

(Concluded on page 18.)

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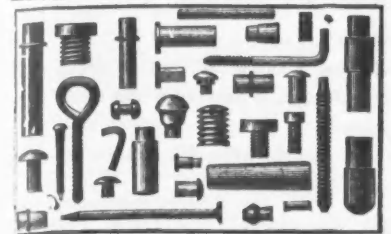


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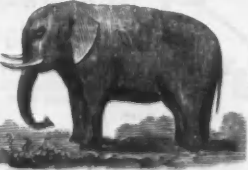


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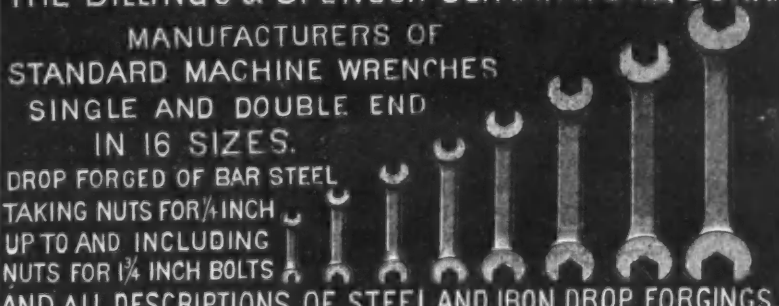
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A Large Prony Brake.
In carrying out an experimental investigation on cylinder condensation in steam engines, which was made the subject of a graduating thesis presented to Stevens Institute some time ago by Messrs. Chas. L. Gately and Alvin P. Kletzsch, it was necessary to secure some means of controlling the velocity of the engine chosen with certainty and safety, at the highest speeds and greatest power that would be attained. The usual method was obviously the best for the purpose, and the design of a Prony brake thus formed a part of the problem to be attacked by the investigators. The form of brake finally concluded upon was substantially the same as that used previously by several well-known engineers. It consists of a brake-wheel or pulley which is keyed on the engine-shaft and is sufficiently strong to sustain safely the maximum load anticipated. The rim of this pulley is turned flat and very smooth, and is fitted with a flexible brake-strap of wrought iron or other suitable material, which may be adjusted to such a tension as will enable it to control the engine at maximum power. The rim is trough-shaped in section, flanges extending inward toward the shaft to a sufficient depth to permit the retention in the circular trough so formed of a stream of water which is used to keep the pulley cool and to carry away the heat produced by transformation of mechanical energy.

The two ends of the break-strap are united by a right and left hand screw in such manner that they may be drawn together and the strap set up to any desired degree of tension. The brake-arms consist of two beams of wood forming a < frame, and secured to the strap at the upper and lower sides, and at their junction supported by a strut resting on a platform scale of nice construction and great accuracy. As the engine-shaft revolves, the tendency of the brake-arms to turn is resisted by the scale, and the effort so measured, multiplied by the relative velocity of the engine-shaft and the supported point on the arm, gives a measure of the power expended. Water is supplied to the pulley rim by means of a hose from any convenient source, and the excess is taken away in a similar manner. The centrifugal action of the rotating mass keeps the fluid in place in the pulley rim, and the eduction-pipe receives the water carried away by it as the tender of a locomotive scoops water from between the tracks when at high speed. This system of cooling permits efficient lubrication without admixture of the grease with the water, and secures a perfection of smoothness and uniformity of rubbing surfaces unattainable with the older forms of the brake.

The following is an account in detail of the designing and proportioning of the brake, as given by Messrs. Gately and Kletzsch. The brake, when constructed, was found to have a very satisfactory form and worked well under probably higher loads than had ever before been known to be controlled by this means:

DESCRIPTION.
The brake described below was designed to control a Harris-Corliss engine at Sandy Hook, Conn. It is a modification of the well-known Prony brake described in Rankine's "Machinery and Mill Work," page 383, § 341. It was designed for the maximum power of the engine—i. e., taking steam at full stroke, the engine running at 100 pounds pressure, and at 100 revolutions per minute. The diameter of the cylinder being 18 inches and the stroke 42 inches, we have for the maximum power developed:

$$HP = \frac{254.47 \times 100 \times 42 \times 2 \times 100}{33,000} = 540.1$$

The brake was accordingly designed to control the engine when exerting this power, and to be used upon a 5-foot pulley of 24-inch face. The size of the pulley was chosen of this diameter, rather than larger, simply because it compelled less removal of floor and railings about the engine, and would also lessen the cost of construction of the pulley.

Having assumed the diameter of the pulley upon which the brake-strap was to be used, the calculation for the remaining parts of the controlling apparatus is as follows:

Assumed diameter, 5 feet; assumed maximum speed of engine, 100 revolutions; circumference, 15,708 feet. This would give for the greatest linear velocity of the pulley per minute, 1570.8 feet. Dividing the greatest number of foot-pounds developed by the engine, at its maximum speed and pressure, by the linear velocity, gives the resistance at the rim of the pulley; or,

$$\frac{540 \times 33,000}{1570.8} = 11,345 \text{ pounds,}$$

which figure is the total friction, in pounds, on the face of the pulley.

BRAKE BLOCKS.

The blocks used in constructing the brake were 2 1/2 inches thick, 5 inches wide and 24 inches long, of unseasoned white oak. In order to keep the brake upon the face of the pulley, wooden lugs were attached to the ends of the blocks, which were placed 7 inches from center to center, thus leaving a space of 2 inches between adjacent blocks for diffusion of the heat and lubrication of the pulley. The blocks were attached to the flexible brake-strap by means of wrought-iron lag-screws of 1/2-inch section, and 2 1/4 inches in length. The three blocks at the top of the pulley were fastened to the arms of the brake, and were of seasoned birch, as no white oak of the size of these blocks was to be had in the neighborhood.

SIZE OF FLEXIBLE BANDS.

The straps, two in number, were calculated according to Rankine ("Machinery and Mill Work," § 354, page 403).

Let T_1 and T_2 represent the tensions at the ends of the band which embraces the pulley, and let T_1 be the maximum tension. Then T_2 exceeds the tension T_1 by an amount equal to the friction between the blocks and the pulley; i. e.:

$$R = T_1 - T_2 = 11,345.$$

Let e denote the ratio which the arc of contact bears to the circumference of the pulley, f the coefficient of friction between the blocks and the pulley; then the ratio

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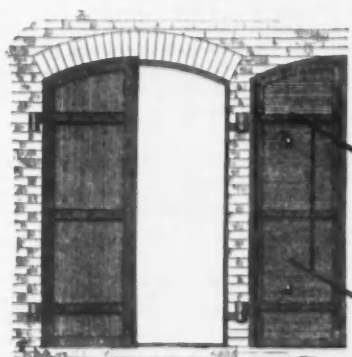
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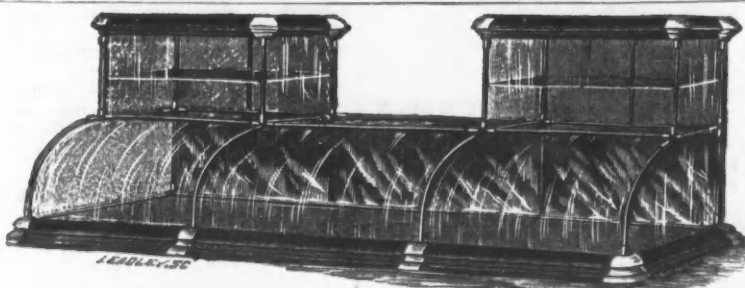
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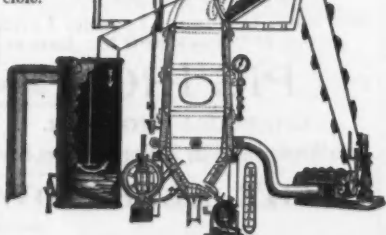


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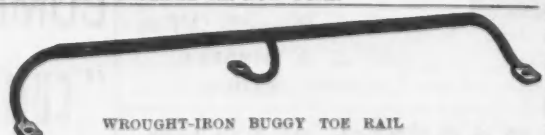
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 $\frac{T_1}{T_2} = 10^{2.7288} = N.$
c, the arc of contact of the bands, = 1, and
f, the coefficient of friction between wood
and cast iron (well lubricated), was taken at
0.2; then
 $N = 10^{2.7288} = 10^{2.7288 \times 0.2 \times 1}$
or,
 $\frac{T_1}{T_2} = 10^{0.54576} = 3.5.$

Having found $R = 11,345$ pounds, we
have for the greatest tension on the band,
 $T_1 = R \frac{N}{N-1};$
and substituting the values of R and N in
this equation, we have
 $T_1 = 11,345 \frac{3.5}{3.5-1} = 15,883$ pounds.
Hence, for the combined tension on the
band, and using two straps, we have for
the tension on one,
 $\frac{15,883}{2} = 7,941.5$ pounds.

Taking the tensile strength of such
wrought iron, as given by authorities, at
40,000 pounds per square inch, and allowing
for a sixfold factor of safety, we obtain for
the section of the band,
 $\text{pull} \times \text{factor of safety} = \text{section in sq. in.};$
tensile strength
or,
 $\frac{7,941.5 \times 6}{40,000} = 1.19$ square inches.

The nearest band iron of this section was
 $\frac{3}{4} \times 3$ inches, and, after careful testing, it
was found to be of sufficient strength, thus
giving, at the same time, the required flexi-
bility, which is of vital importance in the
operation of brakes. At each end of the
bands it was found necessary to weld on
round bar iron to admit of threads being
cut for the purpose of tightening and loosening
the brake.

As this bar iron is subjected to the same
stress as the bands, the section should be the
same; hence, we have for the section of
 $\pi r^2 = 1.19;$
 $r = 0.625,$

and the diameter should be 1.25 inches.
These bars were of unequal length, being
purposely so made in order to permit the
passing of the angle iron of the one used in
tightening and taking up the wear of the
brake. The bands passed through the arms
of the brakes and thence through the angle
iron, which was made specially for this
purpose, and placed above the arms. This
angle iron was not rigidly attached to the
brake; it was held firmly in place by the
tightening of the bands and also by means
of dovetailed wedges which were driven
home occasionally in order to prevent any
moving should they have been loosened in
any way by the continual tremor of the
brake.

ARMS.
The arms were two in number, of 6 by 6
inches, of well-seasoned spruce. The length
was made 10 feet 6.1 inches from center of
the bearing surface on the pulley to center
of bearing surface on the scale.
This length was purposely so chosen, as it,
in the first place, brought the scale beyond
the rim of the fly-wheel, and, secondly, it
greatly facilitates calculations of the horse-
power developed, the circumference of a
circle whose radius is 10 feet 6.1 inches
being 66 feet. Thus, instead of multiplying
by 66 feet and then dividing by 33,000 to
obtain the horse-power, it is only necessary
to divide the product of the net scale pressure
and the revolutions per minute by 550,
the quotient being the horse-power developed—4. e.:
 $HP = \frac{W \times Rev. \times 66}{33,000} = \frac{W \times Rev.}{550}$

The arms were but slightly tapered, so as
to get as much weight as possible at the
ends without encumbering the apparatus,
and in order to produce a greater stability,
and consequently a more uniform running of
the engine.

The ends of the arms were connected by a
piece of chestnut 2 x 8 x 18 inches, firmly
bolted to them, the bolts being turned con-
ical at the ends and of the same length, so
as to insure a uniform bearing on the scale.
This was also further adjustable by the
wrought-iron ties connected with the bands
on the under side of the brake, and, by
means of a swivel placed in each tie, these
could be tightened or loosened accordingly
as one or the other of the bolts was found
not to be bearing firmly.

The stand through which the pressure was
transmitted to the scale was composed of two
uprights, 6 x 6 inches, of white pine, sur-
mounting a pedestal covering the greater
part of the scale platform. Upon these up-
rights was placed a steel plate of $\frac{1}{4}$ -inch
thickness, which received the pressure of the
bolts. The scale was a Fairbank's Stand-
ard, was carefully balanced, and was capa-
ble of accurately weighing 3000 pounds. All
weights used were carefully weighed on a
standard balance, and none were used that
were found not to be absolutely correct.

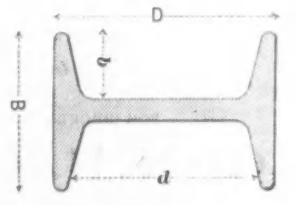
THE PULLEY.
It was found necessary to design and con-
struct a special pulley upon which the brake
could be used when the maximum power of
the engine was being developed. The design
and calculation was an important matter, as
upon the strength of this pulley depended
the safety of the engine and of those assist-
ing in the experiments. Besides, several
factors entered in its construction which we
have noticed before, as, for instance, the
heating and expanding of the rim and arms
caused by the friction of the brake, the
great normal pressure caused by the tight-
ening of the brake, and the unequal pressure
the rim would be subjected to in tightening
first one band and then the other.
As already mentioned, it was deemed ad-
visable to make the pulley 5 feet in diam-
eter. In order to clear both the fly-wheel
and eccentric it was found necessary to
make the pulley of 24-inch face.
As the common segmental arm would give
but a very narrow bearing for the rim, the

writer advised an arm of T-section, which
was found to answer the purpose.
The calculations for the parts of the pul-
ley were made according to Unwin ("Ma-
chine Design"), who gives for the thickness
of rim:
 $t = 0.7 \delta + 0.005 D,$
where D = diameter in inches = 60 inches;
and δ = thickness of belt taken at 0.5 inch.
Hence, by substitution,
 $t = 0.7 \times 0.5 + 0.005 \times 60;$
 $= 0.65$ inch.

The number of arms was assumed at six;
and from the same author, for the thickness
at the nave,
 $h = 0.1781 \sqrt{\frac{P D}{n}}$
 P being the driving effort, 11,345 pounds;
 D = diameter = 60 inches; and
 n = number of arms = 6;
 $h = 0.1781 \sqrt{\frac{11,345 \times 60}{6}};$
 $h = 8.54$ inches.

h_1 = breadth of arms = $\frac{h}{2} = 4.27$ inches.
For h at the rim, we take two-thirds that
of the nave.
For h_2 at the rim, we take two-thirds that
of the nave.
For the thickness of the nave,
 $\delta = 0.18 \sqrt[3]{B D + \frac{1}{4}};$
where B is the face = 24 inches;
 D is the diameter = 60 inches.
Substituting, we have
 $\delta = 0.18 \sqrt[3]{24 \times 60 + \frac{1}{4}};$
 $\delta = 21$ inches.

The diameter of the main shaft being 9.12
inches, the calculated thickness of the nave
was judged rather small, and 2.5 was used
instead. The rim was also made $\frac{1}{4}$ inch
heavier at the center than the calculated
dimension used for the edges of the rim.

CALCULATIONS FOR DOUBLE T ARM.

Section of Pulley Arm.

From Trautwine, page 196, we find for
the moment of inertia of this section,
 $I = \frac{1}{12} B D^3 - \frac{1}{12} (2 b d^3)$
and, considering the arm as fixed at one end
and loaded at the other (Wood's "Resistance
of Materials," Eq. (182) page 188),
 $P l = \frac{R I}{d}$
where P = load;
 l = length of arm;
 I = moment of inertia;
 R = modulus of rupture;
 d = $\frac{1}{2} D$.
Load on one arm = one-sixth of 15,600
 $= 2600 = P.$
 $l = 30 - 7\frac{1}{2} = 22.5$ inches.
 $I = \frac{1}{12} (4 \times 8^3) - \frac{1}{12} (2 \times 1\frac{1}{2} \times 5^3)$
 $= 40.6.$

Allowing a factor of safety of 3, we have
by substituting in the above formula, and
transposing,
 $3 \times 2600 \times 22\frac{1}{2} = \frac{R \times 40.6}{4};$
 $175,500 = R \times 10.15;$
 $R = 17,290;$
hence, the above sections and dimensions
are ample.

MANIPULATING THE BRAKE.
The controlling of the engine by means of
the brake needed the attention of one man
and was not an easy task. For the purpose
of handling the brake with ease a platform
was placed at a convenient height, and, by
means of a long wrench, the tightening and
loosening of the bands were easily accom-
plished. On account of the heating and con-
sequent expansion of the face of the pulley
when dry, the friction was increased and
caused an unnecessary fluctuation in the
speed. To prevent this heating, water was
led to the inner face of the pulley from the
mill dam through a 2 1/2-inch fire-hose. By
this means the face of the pulley was kept
quite cool, and, as the friction between the
brake-blocks and the face of the pulley was
reduced to a minimum by effective lubrica-
tion (beef tallow, fine flake plumbago, and
lard oil were found to work best), the con-
stancy of the conditions under which the
test was made was well maintained.

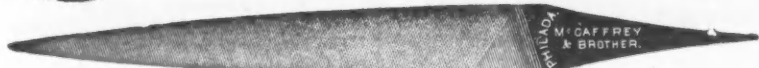
Iron and Steel Ties in Europe.
Mr. Henry Mathieu, chief engineer of the
Chemin de Fer du Midi, has lately published
in the *Revue Générale des Chemins de Fer* a
very interesting article on the wood ties
employed on the French railways. Mr.
Mathieu has inquired into the consumption
of wood ties in 1883 and 1884 on the differ-
ent French lines, and by comparing these
studies with other results obtained before he
draws from them very interesting conclu-
sions on the duration of the wood ties. He
naturally finds that it varies much accord-
ing to the stuff employed, the climate, the
ground and the ballast on which the ties are
laid. It principally depends on the system
of preparing them and the quality of the
stuff used, whether creosote or sulphate of
copper. In this respect the observations
made on one line differ often from those
made on another line. The average results
are as follows: Oak ties not prepared last
on an average 14 years; when creosoted, 18.
Creosoted beech ties last 8 to 10 years.
Creosoted ties of pines of the Landes, 12
years; prepared with sulphate of copper, 8
to 12 years.
Mr. Mathieu then examines the question
of substituting metal for wood, and remains
in favor of wood, admitting, however, that
the substitution of steel for iron is a very

Paris, 1878.

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EAST WILTON, May 26, 1884.

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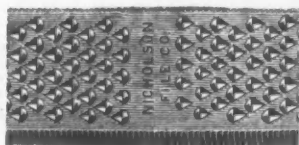
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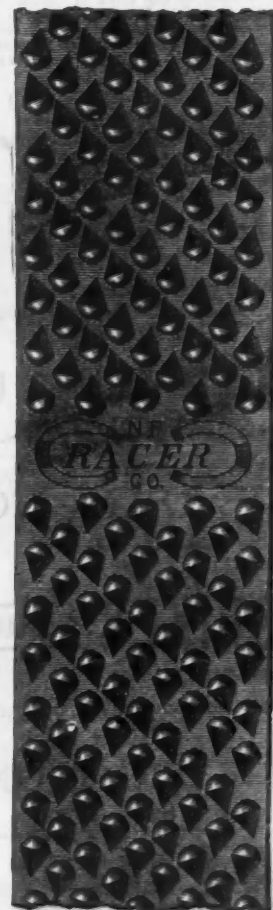


In the ordinary Rasp, as will be seen from the above cut, the face of the tooth is at right angles with the edges of the Rasp.

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PATENT "RACER"

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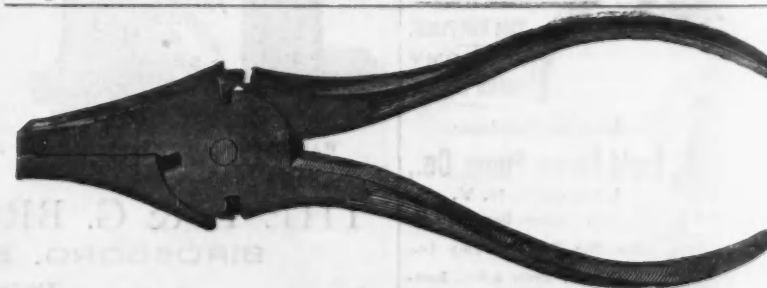
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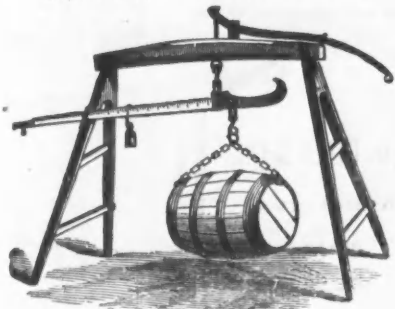
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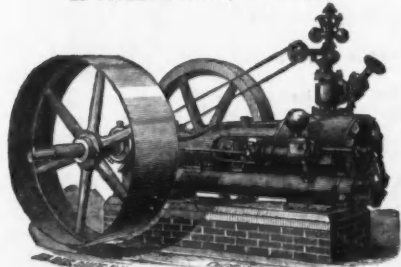
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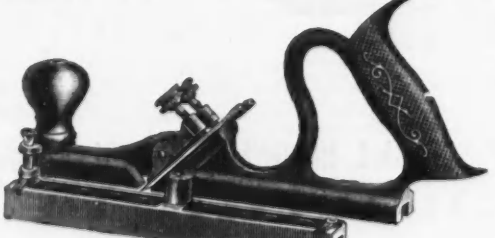
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important one, and that one of the principal
inconveniences of the metal ties—the want
of solidity in the joints—may be obviated by
careful attention during the first two years,
which will make the rails and the sleepers
solid. Mr. Mathieu further demands that
metallic ties be made heavier if they are to
succeed, and lastly gives a table showing the
situation of the longitudinal and transverse
sleepers in the countries which have tried
the different systems. This situation, ex-
pressed in kilometers per single line, was, on
January 1, 1884, as follows:

Countries.	Length of line with metallic sleepers.		Length of line with transverse sleepers.		Total.
	Km.	Long'd'l.	Km.	Trans.	
Germany.....	22,192	2,809	2,491	5,300	
Austria-Hun- gary.....	12,377	42	16	58	
Holland.....	1,073	10	180	190	
Belgium (incl. Central).....	357	1.2	6	7	
Switzerland.....			63	63	
Total.....		2,932	2,756	5,708	

It may be added that since 1885 England
also has begun to try the metallic road by
adopting on the London and Northwestern
Line the Webb ties. Belgium also made
trials in 1885, and the length of the lines
with metallic ties may be taken as 6214 km.
by the end of 1885.

Latest Legal Decisions.

MASTER AND SERVANT.

A mechanic who was employed to make
repairs to a building used ladders in making
a platform for his men to work upon, and
the rope used in tying the planks to one of
the ladders was cut by the swaying of the
planks in a high wind, and a passer-by was
injured by the falling of a plank. He sued
the owner of the building on the ground that
he was liable for the negligence of the me-
chanic as his servant, but his complaint was
dismissed. On the case—*Hexamer vs. Webb*—
being carried to the Court of Appeals of
New York, the judgment was affirmed.
Judge Miller, in the opinion, said: "If the
owner of a building employs a mechanic to
make repairs upon it without any specific
arrangement as to the terms and conditions
of the employment, it imposes upon the em-
ployee the responsibility incurred by acts of
negligence of himself or of those who are
aiding him in doing the work. It is abso-
lutely essential in order to establish a liability
against a party for the negligence of others
that the relation of master and servant
should exist. It is not enough, in order to
establish the liability of one person for the
negligence of another, to show that the per-
son whose negligence caused the injury was
at the time acting under an employment by
the person sought to be charged. It must
be shown, in addition, that the employment
created the relation of master and servant
between them. Unless the relation of mas-
ter and servant exists, the law will not im-
pute to one person the negligent act of an-
other."

CHECK—TITLE OF ONE TAKING IT FROM PRETENDED PERSON.

A man who represented himself as Charles
Barney was paid by a firm of auctioneers,
by a check to his order, for a team of horses
they had sold for him. They had made cer-
tain inquiries as to his identity by telegraph,
and thought that he was Charles Barney of
a certain town, and a reliable man; the
pretended Charles Barney, for that was not
his name, had made no representations as to
his identity. Before the check was pre-
sented, the makers learned that the team
had been stolen and that the name of the
payee was a false name, and they stopped
payment of the check. In the meantime
the payee had indorsed the check over to a
hotel keeper in payment of his bill to him,
receiving the difference in money. The
latter presented the check at the bank and
was referred to the makers, who refused to
pay it on the ground that they were not
liable to the pretended Charles Barney. In
an action on the check—*Robertson vs. Cole-
man*—the judge instructed the jury to find
for the plaintiff, and on the case being
carried to the Supreme Judicial Court of Mas-
sachusetts the verdict was supported and
judgment entered thereon. Judge Field,
in the opinion, said: "The name of a person
is the verbal designation by which he is
known, but the visible presence of the per-
son affords surer means of identifying him
than his name. The defendant, for a valu-
able consideration, gave the check to a per-
son who said his name was Charles Barney,
and whose name he believed to be Charles
Barney, and he made it payable to the order
of Charles Barney, intending thereby the
person to whom he gave the check. The
plaintiff received this check for a valuable
consideration, in good faith, from the same
person, whom he believed to be Charles
Barney, and who indorsed the check by
that name. It appears that the defendant
thought the person to whom he gave the
check was one Charles Barney, an existing
person, but it does not appear that he
thought so from any representations made
by the payee, although this, perhaps, is im-
material. The contract of the defendant is
to pay the amount of the check to this payee
or his order, and he has ordered it to be paid
to the plaintiff. If the payee obtained the
check from the defendant by fraudulent
representations, the plaintiff took it in good
faith and for value, and his title cannot be
assailed by the defendant."

SALE—FRAUD—RECLAMATION.

A man calling himself Johnson, and repre-
senting that he was one of the firm of Fort,
Johnson & Co., commission salesmen of live
stock, at Indianapolis, went to the farm of
S., who had 40 head of cattle to sell, and in-
duced him to take a pretended check of Fort,
Johnson & Co. in payment. This man said
to S., who was not entirely satisfied: "If
this check is not promptly paid, these cattle
are yours until you get the money." The
cattle were to be shipped to Fort, Johnson &
Co., and the swindler went to them repre-
senting himself to be one J. Ziegler, in whose
care, for Fort, Johnson & Co., he had had
the cattle billed, and had them sell the cat-
tle to Alexander & Co. as his cattle. They
paid for them and shipped them East. The

check was not paid, and S., tracing his cat-
tle to Alexander & Co.'s hands, demanded
them, and being refused sued for their
value and recovered a judgment. The case,
on appeal to the Supreme Court of Indiana—
Alexander vs. Swackhamer—was affirmed.
Judge Mitchell, in the opinion, said: "A
purchaser in good faith for value will take
title to goods obtained by his vendor by
fraud, but the delivery must have been
made to such fraudulent vendor. In this
case, however, there was not a delivery to
the swindler; S. intended to deliver the cat-
tle to Fort, Johnson & Co., and as they had
no contract with him they took as bailey
only. Alexander & Co. took from Fort,
Johnson & Co. their title only, and must ac-
count to S. In using the cattle as their own
they converted the property of S., and must
pay him. The judgment must be affirmed."

CARRIER—FAILURE TO PERFORM CONTRACT.

J. made a contract with D., a carrier, to
take a boiler to a certain dock for \$100.
When D. reached the point of delivery he
demanded \$150, and on J. refusing to pay, he
took the boiler to his own dock and there
unloaded it. When J. made a formal de-
mand, \$150 freight and \$9 dockage was re-
quired of him. He then brought an action
of replevin and recovered a judgment on the
tender of \$100, the freight agreed on. The
defendant carried the case—*Johnson vs. D.*
—to the Supreme Court of Michigan, when
the judgment was affirmed. Judge
Morse, in the opinion, said: "If the con-
tract was as plaintiff claimed, and the jury
specially found, then the captain of the boat
did not perform his contract, and under all
of the authority was not entitled to his lien.
It was not sufficient that the boiler was
brought into port. The contract called for
the delivery of the boiler at the plaintiff's
dock, and there must have been a delivery
or an offer to delivery there. A partial per-
formance is not sufficient unless delivery is
dispensed with or prevented by the owner."

TRUSTEE AS PURCHASER UNDER ORDER OF COURT.

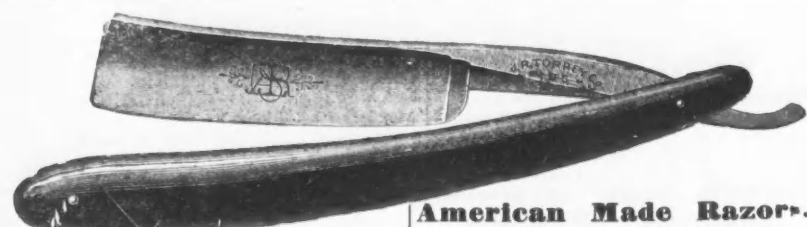
Two trustees of property applied to the
court for leave to purchase the trust prop-
erty at the sale of it which had been or-
dered. In the application they set out the
interest they had in the property, and all
the other parties interested were given
notice of the proceeding. The sale was
made and the trustees bought the property,
but they refused to complete the purchase,
on the ground that they could not buy at the
sale of the trust property. In this case—
Scholle vs. Scholle—the Court of Appeals of
New York affirmed an order compelling the
trustees to complete the purchase. Judge
Earl, in the opinion, said: "The general
rule is not disputed that the purchase by a
trustee, directly or indirectly, of any part of
a trust estate which he is empowered to sell
as trustee, whether at public or private sale,
is voidable at the election of the beneficiaries
of the trust, and this rule will be enforced
without regard to the question of good faith
or adequacy of price, and whether the
trustee has or has not a personal interest in
the property. Nor is it sufficient to enable a
trustee to make such a purchase that the
formal leave to buy, which is usually granted
to the parties in a foreclosure or partition
sale, has been inserted in the judgment. But
where the trustee has an interest to pro-
tect by bidding at a sale of the trust prop-
erty, and he makes special application to the
court for permission to bid, which, upon the
hearing of all the parties interested, is
granted by the court, then he can make a
purchase which is valid and binding upon
all the parties interested, and under which
he can obtain and transmit a perfect title.
Under the circumstances here there can be
no doubt that the trustees can take a title
against all living parties, and against any
unborn grandchildren, if any such should
hereafter come into being."

PARTNERSHIP—INSOLVENCY.

A firm became insolvent and one of the
members withdrew property to pay a debt
of his own. A creditor brought attachment
to recover the property on the ground that
this application of the firm's property was
fraudulent, but the attachment was set aside
on the ground that the creditors of a firm
have no lien on its property except through
the partners, and that, as they consented to
this appropriation of the property, they must
take judgment before seizing it. The case—
Keith vs. Armstrong—was carried to the
Supreme Court of Wisconsin, where the
judgment was reversed. The Chief Justice
(Cole), in the opinion, said: "The assets of
the firm must be held to pay the debts of it.
A partner has no right to use the property
at the expense of the creditors of the firm.
The rule is sound and clear that a partner
cannot appropriate partnership funds to the
payment of his individual debts unless that
firm was at the time solvent, and also had
sufficient property remaining to discharge
all the partnership liabilities. Any such
application of the partnership funds is frau-
dulent to the creditors of the firm, the
partnership being insolvent. We have held
that the preference of the debt of an in-
dividual partner in an assignment by the
firm was fraudulent, and ordered the assign-
ment void as to the creditors of the firm who
elected to avoid it. But the doctrine must
be considered settled that partnership debts
have in equity a priority of claim to be dis-
charged from the partnership property, and
as between a firm and its creditors any
transfer of the firm property by a partner
to pay his own debt is fraudulent unless the
firm is solvent at the time. As to the ques-
tion of insolvency, it was shown that the
firm could not pay its debts in the ordinary
course of business; that is insolvency."

TRADE-MARK—USE OF NAME IN BUSINESS.

The proprietor of the German Sweet
Chocolate sued for an injunction to retain
another manufacturer from using the same
name and imitating the wrapper and form
of the chocolate. It appeared that name
was given to the manufacture by the maker,
one Samuel German, who was employed by
the plaintiffs, and who assigned to them the
right to use his name in the manufacture and
sale. The Supreme Court of California, in
this case—*Pierce vs. Guithard*—reversed the
judgment below, deciding in favor of the
plaintiffs, not on the ground of trade-mark,



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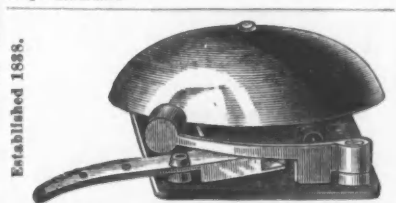
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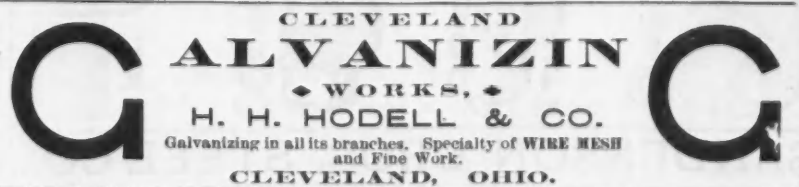
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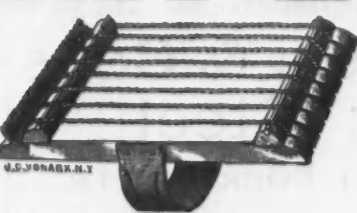
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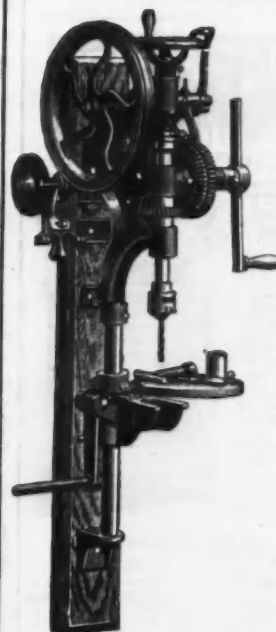
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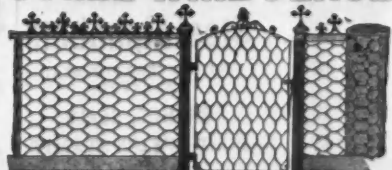
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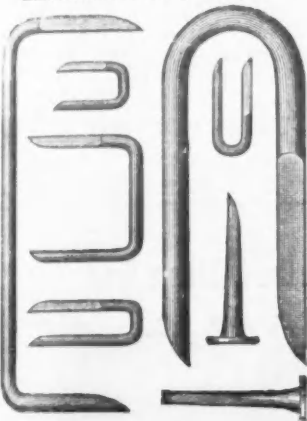


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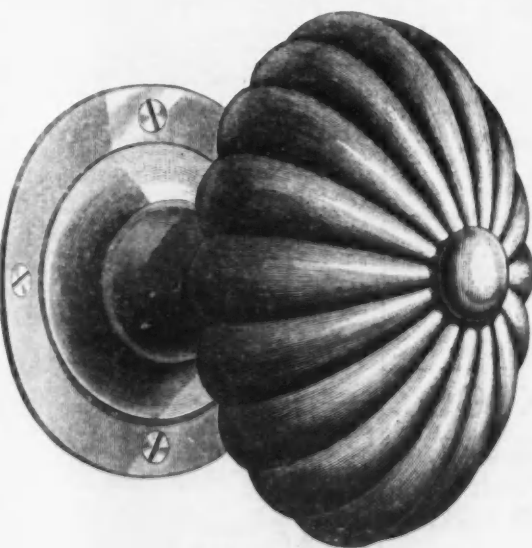


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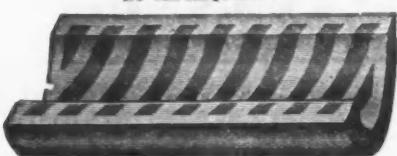
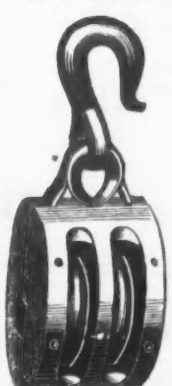
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but on the broader ground of fraud. Judge Rop, in the opinion, said: "It is not necessary to decide whether the plaintiff's label, with the accompanying words and devices, constitute a trade-mark, and as such the exclusive property of the plaintiff, for the reason that it is a fraud on a person who has established a business for his goods and carries it on under a given name with a particular mark for some other person to assume the same name or mark, or the same with a slight alteration, in such a way as to induce persons to deal with him in the belief that they are dealing with the person who has given a reputation to the name and mark. Equity gives relief upon the ground that one man is not allowed to offer his goods for sale representing them to be the manufacture of another trader in the same commodity. Suppose the latter has obtained celebrity in his manufacture, he is entitled to all the advantages of that celebrity, whether resulting from the greater demand for his goods or from the higher price the public is willing to give for the article rather than for the goods of the other manufacturer whose reputation is not so high. Where, therefore, a party is in the habit of stamping his goods with a particular mark or brand, so that the purchasers of his goods having that mark or brand know them to be of his manufacture, no other manufacturer has a right to adopt the same stamp, because by so doing he would be substantially representing the goods to be the manufacture of the person who first adopted the stamp, and so would, or might be, depriving him of the profit he might make by the sale of the goods which the purchaser intended to buy. In this case such unlawful purpose on the part of the defendant was plainly made to appear, and must be forbidden to continue such a course of business."

English Letter.

(From Our Regular Correspondent.)

LONDON, April 12, 1886.

THE WEEK

has been chiefly characterized by the quarterly meetings which took place on April 6, 7 and 8, but these gatherings produced scarcely any change. They were pretty well attended and a certain amount of business was done, yet it cannot be said that they were at all up to even an average level. I hear that in some quarters a more hopeful tone was indulged in, but the bad effects of Mr. Gladstone's separationist scheme and the apprehensions of serious occurrences through the perversion of Greece prevented a good deal of business from being put through. The ironmasters talked a good deal about the newest scheme for effecting a reduction in the output of pig iron, and their opinions were greatly divided as to the chances of the proposal. In some cases the smelters firmly supported the proposal, while in others they opposed it. Not at all oddly, many favored the plan of limiting the production with Draconian severity, but thought some exceptions must be made, and, curiously, they themselves could not possibly stop or even limit their make, owing to running contracts. That is human nature all over, I suppose. Men who take rather wider views are agreed that the production is far beyond the consumptive requirements of the market, but they urge that the principal offenders are the smelters of Scotland and the North of England, who should, therefore, be bound down much more rigidly than their fellows in the other iron-making localities. For these reasons some hold that the British Iron Trade Association seek to accomplish too much, whereby the risk of failure is greatly augmented. Be that as it may, Mr. Jeans, the secretary of the British Iron Trade Association, has issued a long circular on the subject, in which various more or less cogent arguments are advanced in favor of a scheme of restriction extending to the whole country. The adjourned meeting will take place in London on April 16, and may possibly be very largely attended, not so much because anybody anticipates the adoption of the plan as because the ironmasters will at all events get "a run up to town," and will be enabled to talk things over among themselves. From what I hear I scarcely expect any good results from the suggestions of the British Iron Trade Association, chiefly because of the hostility of two or three leading Scotch and Cleveland firms, but also because the smelters of the inland districts say they fail to perceive the equity or fairness of trying to punish them for the sins of the overgrown Northern districts. While on the theme of combinations I may say that there is a good deal of discussion as to the future of the International Rail-Makers' Association. That organization died very quietly on April 6, and an amusing epitaph has been published anent its decease. The bonds having been thus severed, the Victorian order for 40,000 tons, which has been the principal motor in bringing about the disruption, has been placed with all haste, and with makers who were all along supposed to be pretty certain of the work. At the same time certain well-known brokers have sent out circulars quoting £4. 2/6 per ton, in the easy assurance that they can get rails rolled at £4 per ton, and despite the fact that the official price is supposed to be £4. 5/ per ton. Whether there is to be war to the knife or not remains to be seen, but it is probable, to say the least. The Germans will certainly have to be reckoned with, and in Herr Thielen, the president of the German association, the Britishers have a foe man worthy of their steel. The official winding up of the defunct international "ring" will be prolonged as much as possible, there being a somewhat strong impression that the "coming together again" and reformation of the railmen is not at all impossible—is even very probable. For the moment all of them profess to deprecate a cutting policy, and I fancy that two or three large orders would set them all by the ears, and show that the enamel of organization is very thin and covers a great deal of active "cussedness."

THE IRON MARKET

has been comparatively lifeless during the week in all departments. The Scotch warrant market has fallen to nearly the level

from which it took its rise in the attempt to force it upward about a fortnight ago, and the closing price was 38 3/4 per ton. Meanwhile standard brands remain nominally at old rates, but some lots have changed hands at lower prices. Shipments have continued to improve, but they are behind the total for the corresponding period of last year. Stocks have again increased. On the West Coast business has been quiet, with the demand at a minimum. Mixed numbers are still quoted at 42/6. For last week the shipments from West Cumberland alone show a decrease of 970 tons compared with last year. In Cleveland the only noticeable feature has been a slight reduction in the amount of iron passing into stores. Shipments have been better, but the demand as a whole shows no material advance upon previous weeks. No. 3, G.M.B., is quoted as before, viz., 30/3, with 30/6 for delivery throughout next month, and 31/ for delivery up to the end of the year. In Staffordshire no change is reported and the business done is merely to meet immediate requirements, for in the present uncertainty neither buyers nor sellers are disposed to enter into engagements for forward supplies. All-mine hot-blast pigs nominally rule at 50/ @ 52/6; part-mine, about 55/, and cinder pigs, 30/. The Swedish market is still stagnant, with prices almost at their lowest point; the Sheffield inquiries are practically nil, the American demand is exceedingly small, the Levant is still laboring under the disadvantage of political excitement, while in India the business done is relatively of an unimportant character. In wire and galvanized sheets the featureless condition which has now prevailed so long continues unbroken, and little confidence is expressed as to an immediate revival. In the finished departments transactions during the week have been of little importance, nearly everything being held over until after the quarterly meetings. Old scrap has been in steady request at low rates, viz.: Old double-headed iron rails, 50/ @ 52/6; No. 1 heavy wrought scrap, 40/ @ 42/6; old iron boiler tubes, 40/ @ 42/6; cast iron, 37/6 @ 40/; flange rails, 50/, f.o.b. London or other British ports. Freight from Glasgow to New York for pig iron by ordinary steamer have been rather easier at 4/ @ 5/. Steel is in fair demand, and for the present nearly all the Bessemer and Siemens works are well employed, but orders are being rapidly worked off, and the prospect is not so encouraging as it has lately been. Some 2000 tons of steel sleepers have just been placed, and it is expected that further contracts will be shortly made. Makers are anxiously awaiting the specifications from the India Office. Steel rails have been hardly mentioned during the week, in consequence of the uncertainty that prevailed as to the international combination.

THE QUARTERLY MEETINGS.

At Middlesboro' on April 6 the meeting was confined to its ordinary habits, and these were not very numerous. The tone was quiet, a spiritless feeling was generally noticeable and very little iron changed hands. The demand, according to appearances, is likely to be kept rather small because of the generally depressed condition of the consuming industries. The quotation of No. 3 for early delivery was about 30/3, with few buyers, 30/6 being quoted for the second quarter's delivery and 30/9 for the third. Ship plates are £4. 10/; girder plates, £4. 15/ @ £4. 17/6; angles, £4. 5/; bars, £4. 12/6; sheets, £6, less 2 1/2 %; puddled bars, £2. 17/6, net. The steel-plate trade is pretty active and prices are about £6. 10/; angles, £6. 5/. At Wolverhampton on April 7 the attendance was a full average one, but it was early apparent that buyers were in a minority. Sheet-makers, as well as makers of bars, hoops and strips, had a slow demand, and works continue only partially employed. There are, however, exceptions to this state of things, a few sheet-makers continuing fully employed. No alteration was made in marked bar prices, and the Earl of Dudley's quotation continues at £3. 2/6 and the quotation of the other branded houses for first quality bars at £7. 10/. The houses whose sales command the £7. 10 figure are very few—such as William Barrows & Sons, John Bradley & Co. and the New British Iron Co. The other list houses are selling at £7, while second qualities are quoted by the same concerns at £6. 10/ @ £6. 5/. At Birmingham on April 8 merchants and buyers were fairly numerous, and there was more inquiry for iron than makers had been led to expect, but the business resulting was not very large, as makers were unable as a rule to accept the low prices offered. The uneasiness was not relieved by the report of fresh embarrassments in connection with the South American trade, precipitated probably by the Monte Videan resolution, by the return of the bills of an important Northamptonshire firm, and by the calling together of the creditors of another firm in the local trade. In none of these cases, however, is the loss expected to be very heavy. Unmarked bars, for which the quotations then ranged from £5. 10/ to £6, might now be had as low as £4. 15/ at works. Common sheets, singles, which fetched £6. 7/6 @ £6. 10/ at the beginning of the year, were now obtainable for £6, and in exceptional cases £5. 17/6. Hoop iron, which has been in rather brisk request of late for the United States and India, was comparatively strong at £5. 8/, and angle iron was about the same. Galvanized corrugated iron, 20 gauge, was to be had in some cases delivered to London at £10, and 24 gauge for a fraction more. Tin plates were 13/ @ 13/3 for IC coke, 13/9 for steel and 15/ @ 16/ for charcoal. Part-mine pig was nominally 37/6 @ £2, and cinder, 27/6 @ 30/, but lower prices were spoken of. Mr. George Wilkinson exhibited on 'Change a new homogeneous sheet in the intermediate stage between steel and iron which attracted some attention and met with several purchases for working-up purposes. The iron produced by this process is free from scale and possesses some advantages only to be met with in expensive charcoal sheets.

SCOTCH PIG IRON

has been quieter after the "corner," which caught some of the bears, and despite the attempt to start another "run up" on the

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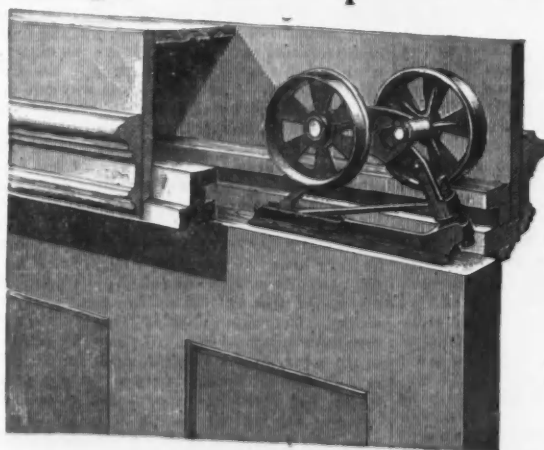
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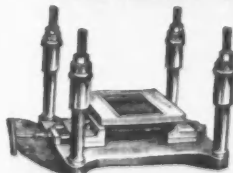
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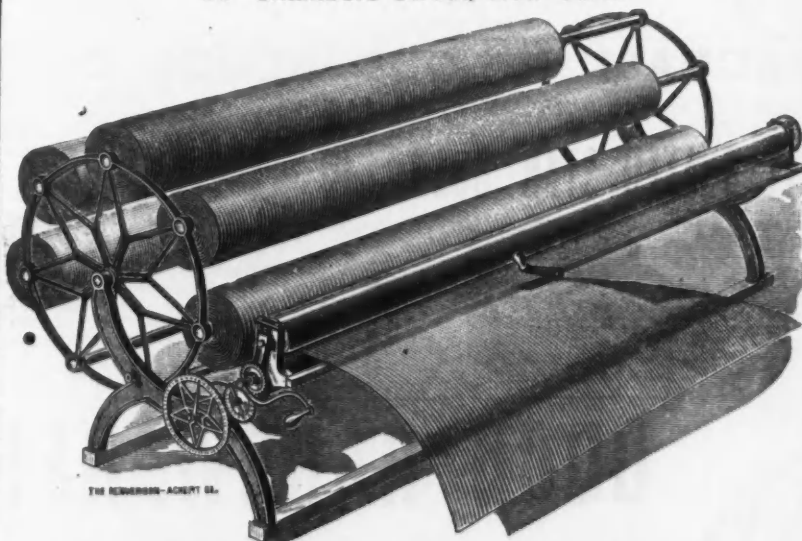
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Star Wire Cloth Reel.

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The Revolving Reel carries Seven Rolls of goods at one time, and is long enough to take in the 40-inch width of green wire. Its construction is first-class; operation simple; measurement accurate, from a fraction of an inch to 50 feet; cutting complete, and it is ornamentally painted.
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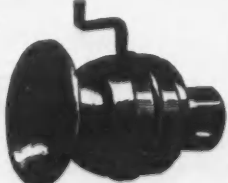


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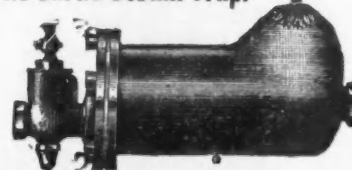
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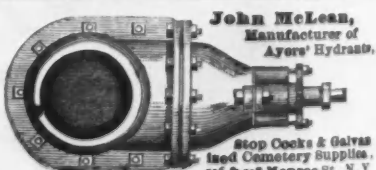
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gineers', Mill and
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strength of the restriction proposals. There
are now 97 furnaces in blast (an addition of
1 last week), against 90 a year ago. In Con-
nall's stores there are now 725,159 tons (an
addition of 5935 tons last week), as compared
with 593,049 tons this date last year. The
shipments are 25,921 tons behind to date,
while the imports from Middlesboro' into
Scotland are 19,655 tons behind this year to
date. Current quotations are:

Deliverable alongside.	No. 1.	No. 3.
Gartsherrrie, at Glasgow.	44/	42/
Coltness, " "	44/	42/
Langloan, " "	44/	42/
Summerlee, " "	47/	42/
Calder, " "	47/	41/
Carnbroe, " "	44/	41/
Clyde, " "	43/	40/
Monkland, " "	40/	37/
Quarter, " "	40/	36/
Govan, at Broomfield, " "	40/	37/
Shotts, at Leith, " "	45/	45/
Carroll, at Grangemouth, " "	48/	45/
Kinnell, at Bo'ness, " "	48/	42/
Glenarnock, at Ardrossan, " "	43/	41/
Eglinton, " "	40/	37/
Dalmellington, " "	41/	39/

MIDDLESBORO' FIG IRON
is quiet, but a shade steadier, if anything,
owing to better shipments and the off chance
of restriction being adopted. Current prices
for G. M. B., f.o.b. at makers' wharves in
the Tees, for net cash, are:

No. 1 Foundry.	32/9	Mottled.	29/3
" "	31/9	White.	29/
" "	30/	Refined metal.	47/
" "	30/	Kentledge.	33/
" 4 Forge.	29/6	Cinder.	30/

The official statistics of the Ironmasters' Association for March are as under:

Make of Pig Iron.

	1886.	1886.	Inc.	Dec.
	March.	Feb.		
Make of Cleveland pig iron, whole district.	147,230	134,800	12,430	...
Make of other kinds of pig, including hematite, spiegel & basic pig iron, whole district.	68,175	63,840	4,335	...
Total of all kinds, whole district.	215,405	198,640	16,765	...
No. of furnaces on Cleveland pig iron at end of month, whole district.	70	69	1	...
No. of furnaces on hematite, &c., at end of month, whole district.	28	30	2	...
Total.	98	99	1	...

Stocks of Pig Iron.

	1886.	1886.	Inc.	Dec.
	March.	Feb.		
Makers' stocks of Cleveland pig iron, whole district.	357,982	361,375	3,393	...
Makers' stores of Cleveland pig iron, whole district.	62,565	62,160	705	...
Pig iron in public stores.	8,647	8,647	0	...
The N. E. R. Co.'s stores.	212,127	180,148	31,984	...
Connall's stores.	641,021	612,325	28,696	...

WEST COAST HEMATITE FIGS
are fairly steady at about 42/6 for mixed
lots in usual proportions, and makers' brands
as follows:

	No. 1.	No. 2.	No. 3.
Cleator.	45/6	43/3	43/
Lonsdale.	43/	42/6	42/3
West Cumberland.	43/	42/6	42/
Lowther.	43/	42/6	42/
Distington.	43/	42/6	42/
Solway.	43/	42/6	42/
Maryport.	43/	42/6	42/
Harrington.	43/6	43/	42/6

THE BOARD OF TRADE RETURNS
for March are in some respects a little more
promising. The imports were valued at
£31,499,937, against £32,067,567 in March,
1885. The exports were worth £18,510,072,
as compared with £18,181,727 in the same
month last year. The iron and steel ex-
ports were worth £1,894,663, against £1,
919,767. The chief exports to the United
States were:

Articles.	Month of March, 1886.	Month of March, 1885.	Month of Feb., 1886.
Alkali, cwt.	329,980	236,497	307,684
Hardware and cutlery.	25,018	18,865	25,040
Iron—Pig, tons.	20,342	12,408	16,187
Bar, angle, rod, &c., tons.	540	151	138
Railroad, all, tons.	887	28	1,000
Hoops, sheets, plates, &c., tons.	470	516	434
Tin plates, tons.	22,514	23,392	22,066
Cast or wrought, tons.	166	117	216
Old, tons.	7,820	1,155	5,401
Steel, unwrought, tons.	4,943	1,584	2,547
Lead, all sorts, tons.	163	111	113
Steam engines, &c., &c.	6,748	2,756	2,787
Other machinery, &c., &c.	33,675	17,350	19,376
Tin, unwrought, cwt.	543	495	522
Special return—			
Iron rails, tons.	11	25	1,000
Steel rails, tons.	825	25	1,000

TIN PLATES.
In London the tin-plate market has been
quiet since my last. Buyers have shown no
anxiety to place orders, and generally speak-
ing matters have remained dull and unsatis-
factory. Three works are reported to have
stopped operations, but that is not likely to
influence the market, as none of them are
large concerns. I quote ordinary 10 cokes,
f.o.b. Liverpool, 13/3 @ 13/6. At Liver-
pool the discussions have been somewhat
enlivened by report to the effect that an
occasional thousand boxes or so of coke tins
have been sold at 12/6, f.o.b. Welsh shipping
port, which is equal to 13/3, f.o.b. Liverpool.
Inquiries generally have been pretty numer-
ous for coke tins and Bessemer steel, but it
cannot be said that much business has been
done. Quotations as a rule are maintained
on the whole fairly at 13/10. Doubtless
there have been some few sales at 12/9 sea-
port, 13/3 Liverpool, but they are few and
far between. There is not much inquiry
for Siemens steel plates with coke finish, nor
yet for the same in charcoal and best char-
coal finish. Buyers are inclined to hold off
a while from buying these. There is more
activity in the inquiry for ternes, and,
though not much actual business has been
done lately, yet no doubt there is some good
business which will have to be placed
shortly.

Erosion in the Bore of Guns.*

Captain Lanfroy commences with a propo-
sition already enunciated in several works
on ballistics, viz.: "That the erosion of the
bore of a gun results from the escape of the
powder gases at high tension through nar-
row orifices, such as the vent or windage of
the projectile." The paper is divided into
six chapters. The first two deal with
smooth-bore guns, guns with few grooves
and the modern polygroove rifling. After
citing numerous experiments with various
pieces of the above description, the author
concludes on the polygroove system as fol-
lows: "That erosion always commences in
the upper parts of the bore, and is divided
into two distinct zones, separated by an
interval less attacked." The first zone is in
the forward part of the cone of the powder
chamber and often embraces the origin of
the grooves. The second, which is always
the most important after a prolonged firing,
is at a distance from the commencement of
the rifling, greater as the powder is more pro-
gressive. The lands are always less attacked
than the neighboring grooves; sometimes
they are intact. In time the erosion extends
over the circumference of the bore at the
positions of the two zones, but the top is
always most injured. Other things being
equal, the erosion develops as much more
rapidly as the caliber is greater, and more
quickly in bronze than in steel. Tool-marks
or defects in metal in the upper part only of
the powder chamber are increased rapidly.
After prolonged firing an increase in the di-
ameter of the bore is found chiefly in the
shot chamber, where the greatest erosion
occurs. At the same time the ring of the
projectile advances further up the cone,
joining the powder chamber to the bore.
The length of service of a gun is almost
always limited by the loss of velocity and
accuracy occasioned by erosion. The wear
of the rings, almost nothing at the com-
mencement of firing, increases with the ser-
vice of the gun. For the first round of each
series in a gun the wear of the ring is about
double that of the succeeding rounds.

Chapter III is a theoretical study of the
mode of production of erosion in the bores
of guns made since 1870. The author states
that when a gun is fired it expands under
the action of the powder gas, which exerts
a certain tension on the interior of the bore
in a circular sense. When the gun is in one
piece this expansion of the bore is propor-
tional to the caliber and interior pressure;
according to the formula of General Virgile
it is in inverse ratio of the modulus of
elasticity, and diminishes when the thick-
ness of the tube increases. But large guns
are composed of several pieces, which, if
they have the same modulus of elasticity,
require a fresh formula to express the rela-
tions of the circular tension and interior
pressure on the bore, owing to the shrinkage
employed to build up the gun. This for-
mula is given, and the author, with the
object of proving that the erosion com-
mences in the upper part of the bore at
the point occupied by the driving ring of
the projectile when the maximum
pressure occurs, and that, all things being
equal, it is greater as the caliber increases,
proceeds to consider the ring of the pro-
jectile in three positions in the bore: 1. In
the forward part of the cone at the com-
mencement of the bore. 2. A little
to the rear of the last position. 3. At the
rear of the cone—the gun being taken as a
smooth bore, with the powder chamber
larger than the bore and connected with it
by a cone. The second zone of erosion is
next dealt with, this being a consequence of
the first. The theory that the principal zone
is caused by blows from the projectile is
questioned, as in this case the lands should
suffer most, whereas it is the grooves that
are most injured. It is not denied that
blows are given by the projectile, but it is
suggested that these will be reduced, as also
the escape of gas, by increased forcing of the
rotating rings. In considering the wear of
the driving rings, on the hypothesis that the
walls of the gun act as a file for helicoid
rifling, the author gives a formula showing
the wear to be proportional to the tangent
of the final inclination of the grooves and the
square of the initial velocity, and considers
it advantageous to increase the number of
the grooves. To diminish the wear as much
as possible, and to preserve the ballistic
properties of the gun, the author suggests a
parabolic form of rifling, in which the pres-
sure will be little at the commencement of
movement—that is, at the parts most
eroded—but in choosing a form of rifling the
wear, and also the maximum circular pres-
sure exerted by the lands on the ring, must
be taken into account.

Suggesting an interior design for a gun,
the author adopts for the shot chamber a
cone sufficiently long for the ring to be
tightly in contact at the moment of maxi-
mum pressure. The angle of this cone has
been approximately determined by experi-
ment; the length should be a little more
than the distance which in guns of the
same caliber already proved separates the
initial position of the driving ring and the
mass of the erosion. The suggested modifi-
cations entail an increase in the diameter of
the fillet of the driving ring, which must be
fixed by experiment. The simplest solution
from the manufacturing point of view con-
sists in making a second cone to follow the
cone of supports for the ring of a projectile,
this cone having a greater inclination, the
commencement of the grooves being well in
advance of the driving ring of the projectile
when sent home.

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* Paper by Capt. A. Lanfroy. From "Abstracts"
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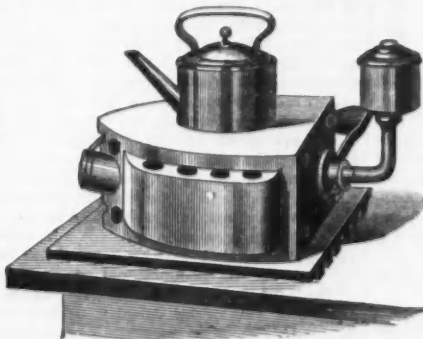
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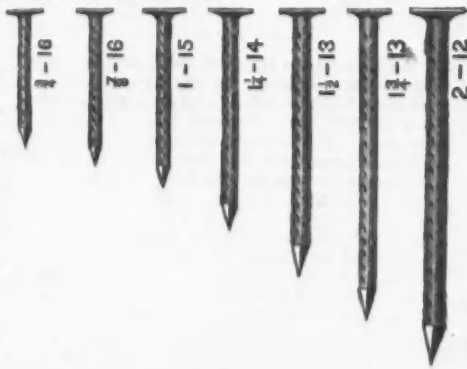
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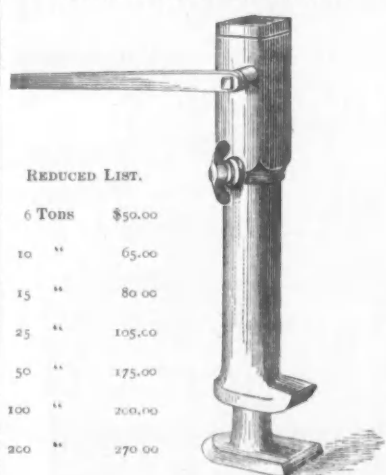
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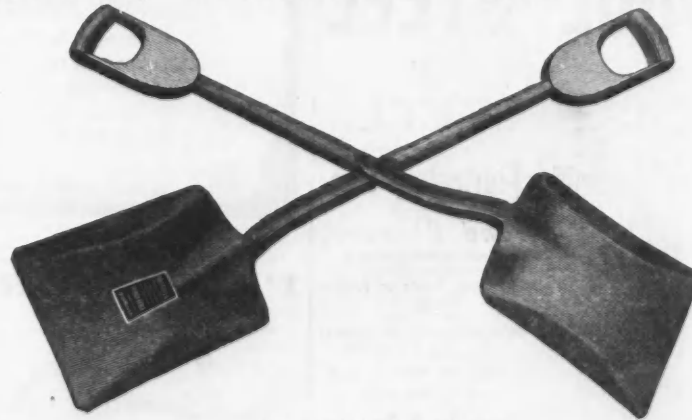
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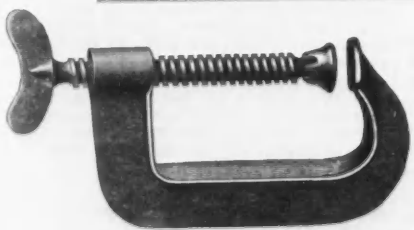
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The Progress of the Iron, Metal and Coal Industries of Russia.

Since the year 1820, when a revolution took place in the iron industry of Russia, it has made the most remarkable progress; but, nevertheless, the production has been unable to keep pace with the consumption, although the imports of iron and steel have also rapidly increased. It is, however, most likely that within the next few years the latter will decrease vastly, as the Russian Government are doing their utmost toward this end by steadily raising all duties and by the circumstance that important new lines of railway will then have been finished and waterways canalized, whereby the internal riches of iron and coal will be at the country's direct disposal.

The first furnaces erected in Russia were those in the Provinces of Ural and Olonetz, opened in 1631-32, the work here being carried out under an imperial ukase, which was revoked in 1782. First, in 1806, the Russian Chamber of Mines was established. Until about the year 1820 most of the bar iron produced in Russia was exported chiefly to England. The latter trade must, however, now be said to have ceased almost entirely, but some is still exported to Central Asia and further east. In 1822 the exports of bar iron amounted to 22,000 tons, but in 1840 only to 14,000 tons, and at present it is only half of that amount. The increase in the iron production of Russia in every 10 years since 1822 has been as follows:

	Pig iron.	Bar iron.
	Tons.	Tons.
1822.....	152,100	.....
1830.....	183,000	.....
1840.....	180,000	83,000
1850.....	227,700	150,000
1860.....	267,800	185,700
1870.....	360,000	251,500
1880.....	456,000	320,000

The quantities of pig iron produced, as compared with those imported, were as follows:

	Production.	Imports.
	Tons.	Tons.
1860.....	297,200	9,100
1870.....	360,000	35,700
1880.....	456,000	256,000

The manufacture of finished iron and steel goods in Russia has progressed greatly during the last 25 years, some being now even exported, for instance, to Central Asia. That this is the case is doubtless due to the heavy duties which have been imposed on all foreign goods, enabling the Russian manufacturers at present to deliver such articles at a price considerably below that demanded from abroad. In consequence the import of the same is now very limited.

The manufacture of machinery in Russia may be said to date from 1860, when the first railway engines were turned out, but already in 1872, at the Moscow Exhibition, the make had advanced to 250 engines per annum, and at the time of the exhibition held at that place two years ago more engines could be turned out in the Empire than could possibly be required. The manufacture of other kinds of machinery, as, for instance, sawmill plants, wood-pulp-makers' and agricultural machinery, implements, &c., has greatly advanced during the last 25 years in consequence of the severe protection, and Russian statesmen confidently maintain that the day is not far distant when all such articles required will be turned out at home. At present most of them are taken from Sweden, some from Germany, but hardly any from this country compared with 20 years ago.

Although great strides have been made during the last 10 years, the Russian ship-building industry is still in a backward state, and this in spite of the duties on vessels built abroad being constantly increased. Nearly every steamer added to the Russian mercantile marine is either purchased or built abroad, some of the Swedish yards, for instance, having for the last five years been busily employed with Russian orders, which have lately also found their way to Denmark and even Norway. To some extent these remarks may also be said to apply to the Russian navy, but several large ironclads are now building in the Baltic and the Black Sea.

With regard to the production and manufacture of other metals than iron and steel in Russia, it may be mentioned that in 1880 there were 336 such works in operation, the manufacture varying in nature, employing 142,000 laborers, and turning out goods to the value of nearly \$3,500,000; 31 copper works, turning out several thousand tons of copper, and 210 works for the manufacture of copper and bronze articles, bell-casting, &c., with 5000 laborers, and a production valued at about \$250,000.

There is, however, hardly any Russian industry which has made such gigantic strides of late years as the coal trade, in spite of the circumstance that at present only one deposit is worked on any great scale, viz., that of Donetz. Besides this deposit there are coals in the Caucasus, the Ural Mountains and some other places, as well as in Siberia.

Since 1840 the production has been as follows: 1840, 15,000 tons; 1850, 52,000 tons; 1860, 131,200 tons; 1870, 683,260 tons; 1875, 1,667,400 tons; 1880, 2,920,000 tons. It is estimated that the Donetz deposit alone is capable of supplying European Russia with the necessary amount of fuel if fully worked.

Sword-Making in Birmingham.

There are only two private sword-makers in Great Britain, the leading one being in Birmingham. The practice at the works of the Birmingham firm is described as follows:

The steel comes in what are termed "sword molds"—thin bars of steel which are broadest in the middle, and which, being broken at that point, give each enough material for two blades. Two men are engaged at each hearth, though there are no bellows to blow, the draft being supplied to all the fires by one steam-driven fan which forces air at a high rate of speed through the cinders. The bar is first heated at the end which will afterward receive the hilt; and a short tongue is beaten out, upon which the tang, or the backbone of the hilt, is welded.

Then the whole half-mold is made white hot for the purpose of being swaged or grooved, a process which enables the requisite width and strength of blade to be secured with the minimum of weight. The mold is laid between a pair of convex dies about 2 inches long, of which one is fixed in the anvil and the other gripped in a strong pair of pincers. The man who holds the pincers takes care that the dies lie directly over one another, and with a small hammer makes the first impress of each bit of grooving. His companion workman, wielding a heavy sledge, emphasises and completes it, and the mold is moved along till the groove is finished. In the process of forging the blade is brought to the requisite curve. The curve is slight in the most recent sword, with which it is the practice to cut and thrust. After so much heating the metal has become comparatively soft. It is hardened by being once more heated, this time to a "worm red," and dipped point downward in a tub of cold water. The surface scale falls off, and the blades comes from the water almost white and exceedingly brittle. It must now be tempered, and the temper is given by a further heating till from white its color passes in turn to brown, purple and blue. To truly observe these changes a great deal of skill and care are required, which experience alone can give.

From the smith the blades go to the grinding shop, a long shed where 20 men sit astride wooden horses and press them against as many ponderous grindstones. It is the grinder's duty to see that the blade is of the true dimensions and pattern. He fits it into a trough to gauge its length and width, and into several slits in an iron plate to find whether it is of the regulation thickness at various distances from the point. One stone is surrounded with rows of beads or "cobbs," which serve to grind the swage. The grinding and polishing sometimes slightly impair the temper of the blade, which needs only, however, to be slightly heated again in order to regain what has been lost. The hilt is then fitted on, and is secured in its place by means of plates riveted on each side of the tang. Then comes the important operation of testing the rigidity, strength and temper of the sword. There are three tests. The blade must be so rigid that it will bear a standard downward pressure without bending, so strong that a man may strike it upon a block of hardwood with all his strength and make no impression on it, and so well tempered that it may be bent without breaking till the distance between point and hilt is reduced from 34½ inches to 29 inches. The fine polish commonly seen upon sword blades is given to them by means, of emery-wheels and wheel brushes; the blueness of ornamental blades by heating them in a sand bath; the damascene ornament by the use of acid. They are sharpened in the Government factories.

Sword blades are made much more quickly than their hilts and scabbards. It is upon these, of course, that the artistic fancy of the maker is often lavished, making them, in Osric's words, "very dear to fancy, of very liberal conceit," and even those hilts and scabbards which are merely made after the regulation patterns consume a good deal of labor in casting and filing. The scabbard of the cavalry sword is shaped from a strip of sheet steel. Placed in an iron book the strip is bent double, and the two edges are formed into a lap joint and brazed together. It is then planished in a mandrel to the required shape, and is fitted with the loops for carrying it, and with the "drag" or tip. The silver scabbards of presentation swords are frequently ornamented with velvet, let into the metal by cutting out portions at each side. Others are embellished with brass mounts, cast and filed like the hilts, and mounts more or less elaborate are necessarily put upon leather scabbards. The process of gilding and nickel-plating, as well as those ornamental arts which have already been spoken of, are made tributary to the decorative work.

Photographing in a Bridge Caisson.

Photography under curious and novel circumstances has recently been attempted at the Forth Bridge, where several groups have been taken in the working chamber of one of the caissons under a pressure of air of 25 pounds to the square inch. It was found that this did not have any effect upon the film, but that the passage of the rays of light was very greatly interfered with by the haze or fog which is always found in compressed air. In order to get a sharp image it was necessary that the air-compressing machine should be run slowly and steadily during the experiments, and that the locks which afford entrance and exit for men and materials should be kept closed, as variations of pressure, either upward or downward, increased the haze. The photographs were taken by Mr. E. G. Carey, assistant engineer, who brought very considerable perseverance to the work. He obtained the light in the first instance from three and afterward from five arc lamps of 1200 candle-power each, and to judge of the time of exposure he first took a group on shore under similar conditions of illumination. Ten seconds were found to give fair results, and a series of views in the caisson were taken with 12, 20, 25 and 30 seconds' exposure. These proved, on development, to be greatly under-exposed, and 10 days later a second attempt, under similar conditions, was made, but with exposures of 5, 10 and 15 minutes. The plates were, however, poor, indistinct and blurred, and it was evident that more light was required. Five lamps were then tried, one at either side of the group, one behind it and two lighting the remainder of the chamber. This attempt gave encouraging results with seven and eight minutes' exposure. In the final experiments it was decided to try the effects of plates of exceptional rapidity, similar to those used for the most rapid yachtwork, and these, with an exposure of one and a half to two minutes, gave very fair results, the lamps being in two rows, one at either side of the group, in such a position that they could not shine into the lens. The lens used was by Dallmeyer, 2½ inches aperture and 18 inches focal length, the plates being 12 inches by 15 inches.

The Iron Age

AND METALLURGICAL REVIEW.

New York, Thursday, April 29, 1886.

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The President's Arbitration Message.

We consider the message of President Cleveland suggesting the creation of a National Board of Arbitration an ill-advised and mischievous document. We have no doubt it was inspired by excellent motives, and was written in the hope that it might lead to legislation which would tend to establish more amicable relations between employers and wage-earners. It is likely, however, to have just the opposite effect. The most unwise thing possible at this moment in a State paper is the recognition of labor as an independent class, having rights and interests other than or different from the rights and interests of citizens in general. In encouraging this idea Mr. Cleveland falls into a very common, but none the less deplorable, error. The President says:

Under our form of government the value of labor as an element of national prosperity should be distinctly recognized, and the welfare of the laboring man should be regarded as especially entitled to legislative care. In a country which offers to all its citizens the highest attainment of social and political distinction, its workmen cannot justly or safely be considered as irrevocably consigned to the limits of a class and entitled to no attention and allowed no protest against neglect. The laboring man, bearing in his hand an indispensable contribution to our growth and progress, may well insist, with manly courage and as a right, upon the same recognition from those who make our laws as is accorded to any other citizens having a valuable interest in charge, and his reasonable demand should be met in such a spirit of appreciation and fairness as to induce a contented and patriotic co-operation in the achievement of a grand national destiny.

However kindly the motive which inspired this utterance, it is none the less to be deprecated as presenting the question in a false light. Our form of government has nothing to do with the value of labor, and Congress has no business to recognize the kind of labor which earns wages as in any essential respect different from the kind of labor which obtains its compensation in the form of profits. It cannot truthfully be said that in this country labor is "considered as irrevocably consigned to the limits of a class and entitled to no attention and allowed no protest against neglect." To intimate that such discrimination is possible is to confess

ignorance of the industrial history of the country. The progress of the arts has closed to the ignorant man many doors which were once open to industry and thrift, but this is a fact which legislation does not account for and cannot remedy. The laboring man has no occasion to insist upon any recognition now denied him, and is in no sense wronged by legislation growing out of the necessities of those who have interests larger than and different from his. He is entitled to a protection not now accorded him against the cruel oppression of organizations which assume to decide for him all questions affecting the sale of his labor, and to compel compliance with their dicta, whether they agree with his wishes and interests or impoverish him and his family. It would be a good thing for the President to ask Congress to devise some means of protecting those among the wage-earners who are compelled to surrender their rights as American citizens and yield unwilling allegiance to an arbitrary and irresponsible tyranny which enforces its requirements by violence; but this is very different from what he does say, and altogether different from what he means.

The President shows some conception of the existing condition of affairs in the next paragraph:

While the real interests of labor are not promoted by a resort to threats and violent manifestations, and while those who, under the pretext of an advocacy of the claims of labor, wantonly attack the rights of capital, and for selfish purposes or the love of disorder sow seeds of violence and discontent, should neither be encouraged nor conciliated, all legislation on the subject should be calmly and deliberately undertaken, with no purpose of satisfying unreasonable demands or gaining partisan advantage.

This is true enough, but it does not cover the whole ground. How is it with those who, under the pretext of an advocacy of the claims of labor, deny the workingman all freedom of choice and action, and defy the National and State Governments to protect him in the enjoyment of the rights which citizenship promises. Capital can protect itself against agitators and trade-union leaders vastly better than labor can protect itself against mob violence. This is a matter which invites attention. If the President has overlooked it, it is evident he has not studied the question very closely. If, recognizing it, he passes it in silence, it will be difficult to escape the conclusion that his message was written for political effect. We quote further:

The present condition of the relations between labor and capital are far from satisfactory. The discontent of the employed is due in a large degree to the grasping and heedless exactions of employers and the alleged discrimination in favor of capital as an object of Governmental attention. It must also be conceded that the laboring men are not always careful to avoid causeless and unjustifiable disturbances. Though the importance of a better accord between these interests is apparent, it must be borne in mind that any effort in that direction by the Federal Government must be greatly limited by Constitutional restrictions. There are many grievances which legislation by Congress cannot redress, and many conditions which cannot by such means be reformed.

The President's explanation of the discontent of labor is in part true, but labor is discontented with a great many things for which employers are in no sense responsible. Improvidence, intemperance and ignorance are the causes of nine-tenths of the trouble which creates discontent in the ranks of labor. There is very little ground for discontent in what the President, who must have been reading some K. of L. literature, is pleased to call "the grasping and heedless exactions of employers." At the present time employers are suffering a thousand dangers from the grasping and heedless exactions of professional agitators and their blind following of deluded victims. We are also unable to see wherein any of the safeguards with which the law surrounds property constitute a grievance on the part of honest labor. For those who teach and believe that "property is robbery," such laws are a constant cause of irritation, but it would not be expedient, even for the accommodation of the Socialists, to place at the mercy of the masses the accumulated fruits of industry. No one will dispute the President's modest assertion that laboring men "are not always careful to avoid causeless and unjustifiable disturbances." When they show a wise and prudent self-restraint they will have better reason than now appears to claim the right to dictate which of the safeguards of wealth against the rapacity of poverty shall be withdrawn.

So far as we have quoted it, the message of the President warrants the opinion already expressed that it is ill-considered and mischievous. Had Martin Irons inspired it, we should have expected much the same sort of document. It is not likely that the President looks to us for suggestions, but we hazard the opinion that what he has sent to Congress is a very different document from that which the situation demands. Labor troubles have outgrown State control in some directions, and have placed serious obstacles in the way of interstate commerce. The President might with eminent propriety have called the attention of Congress to this fact. He might also have pointed out that certain State Governments have shown themselves unable or unwilling to protect life and property and preserve peace within their boundaries; that large numbers of citizens are restrained by threats and intimidation from pursuing the lawful and useful avocations in which they wish to engage, and that trade and travel are impeded by local rebellions in different parts

of the country. He might with propriety have suggested such legislation as may be needed to suppress violence and protect life and property, and to restrain within proper bounds the exercise of the power acquired by the working classes through organizations not recognized by law nor responsible to any authority save that of their own creation. This would have been the natural line of thought for the President of the United States at this time, but it would not have pleased the Knights of Labor as well as what he has said. If to please them was his object, the message is a document to which the ordinary rules of criticism applicable to State papers do not apply.

As a partial remedy for the existing causes of contention between employers and workmen, the President suggests the organization of a National Board of Arbitration. The Constitutional authority for such a suggestion is extremely slight, and the precedent sought to be established is at best a dangerous one. If the duty of such a board was to watch the conflict of private interests in the several States and advise the President when it was necessary or proper to call upon Congress to maintain a Republican form of Government in the States and protect interstate commerce from interruption, it would have a useful function. If, however, it is to hear and decide every great and petty question submitted to it, without power to enforce its decisions or make them binding upon those who ask arbitration, it will be as useless an appendage to the Government as Congress could possibly create. The kind of arbitration which will avert strikes and settle disputes is that which begins and ends inside the establishments where it is needed. Between the employer and his men, arbitration by a fairly constituted board representing both parties in interest is practicable and desirable. We should like to see such a board established in every manufactory in the country, and believe that 90 per cent. of the questions now brought before the unions could be settled amicably in the shops in which they originate. This would not suit the professional agitators who make a living by interfering with things that do not concern them, but it would suit both workmen and employers and would prevent countless strikes and lockouts.

It is impossible to imagine a board so constituted that it could arbitrate wisely in the affairs of a hundred different trades and occupations. To call witnesses and hear the special pleadings of interested representatives of conflicting interests would entail heavy costs which neither employers nor workmen would consent to pay. Reference to a board at Washington of questions originating at points geographically remote from it would involve delays of which both labor and capital would become impatient, and if to these were added the delays due to a full calendar of cases primarily submitted labor would laugh at the suggestion of awaiting its judgments. The scheme is impracticable. Two hundred such boards scattered over the country could not arbitrate the differences between capital and labor.

Finally, the United States Government has nothing more to do with the disputes between employers and workmen than with quarrels in church choirs. Its concern with the affairs of labor begins when the State Governments neglect or fail to protect life and property within their borders, or when interstate commerce is interrupted by riotous proceedings. An attempt to do anything more than this will be to waste public money and give the workingman the false idea that he is entitled to some special consideration at the hands of the Government—a consideration other than and different from that to which all law-abiding citizens are entitled. It will be a sorry day for the Republic when the wage-earning classes begin to demand class legislation. When they make their immediate and selfish interests paramount to their duties as citizens we may well despair of the future of popular government.

We print elsewhere a letter from one of the leading rail-mill managers in the country, in which he confirms the view expressed by us that modern methods of manufacture tend rather to insure the production of better material, from a mechanical point of view, than was the case under the older system of rolling. On this subject there can be no room for discussion, and the attitude of our contemporary, the *Railroad Gazette*, which it clings to with the tenacity born of imperfect acquaintance with the facts, is not tenable. The *Railroad Gazette* makes earnest efforts to convince railroad managers that it is their duty to find out what will best insure maximum service of rails, and when they have discovered it to insist that it is delivered to them. We cordially sympathize with such endeavors, but our contemporary does flagrant injustice to our rail mills when it tries to add strength to its argument by insisting that the producers are intent only upon turning out a cheap article, neglecting quality. Every rail mill in the country is keenly alive to the importance not only of meeting the requirements of its customers, but of discovering what those requirements are. So far as they are concerned, indifference or even antagonism does not exist. They are eager to aid in accomplishing what should be the common end—the production of rails which will yield the maximum service for the unit of money. The comments

of the *Railroad Gazette* again and again convey the impression that it is not the interest of the steel-rail producers to look much after quality—that the railroads have little or nothing to expect from that quarter except under coercion. We believe that such a course does harm to the common cause. We know that leading men, both among consumers and producers, recognize this. They exchange views and compare notes. They do not occupy a position of defiance or of abject submission, according to the condition of the order-books of the mills or the state of the rail market. The producers not only plead for a hearing, but they believe themselves entitled to it. Those who are deliberately fostering the idea in the rank and file of railroad men that makers of steel rails must be taken by the throat before they will consent to give reasonable consideration to questions of quality are doing harm to their own clients and are injuring a great American industry.

Great Britain's Production of Iron and Steel.

Mr. J. S. Jeans, secretary of the British Iron Trade Association, has published his usual annual report, covering the statistics, so far as they are obtainable, on the iron and steel production of Great Britain. Mr. Jeans has been making progress, and though he has not yet attained that degree of fullness of detail characterizing the work of the American Iron and Steel Association, yet the improvements made from year to year give good promise for the future. The report is robbed of some of its freshness by the quick publication of full statistics, or at least close approximations to it, by local enterprise. Thus we have details of the product of the Scotch and Cleveland blast furnaces at an early date. Then, too, Mr. Jeans himself has followed the excellent practice of giving a preliminary statement on important branches of the trade so soon as the data at hand are complete enough to warrant it. We some time since reviewed his figures relating to the make of pig iron and of Bessemer steel. The report is not cheerful reading to the majority of English ironmasters. It is an almost unbroken record of declining product, smaller home demand, lessened exports and shrinking prices. In spite of the falling off in the production of pig iron from 8,490,224 gross tons in 1883 to 7,528,966 tons in 1884, to 7,250,657 tons in 1885, stocks piled up, growing from 1,698,978 tons to 1,809,467 in 1884 and 2,352,169 tons in 1885. They have continued piling up iron since, and, unless the effort being made now by the British Iron Trade Association to obtain consent to a fairly general restriction of output succeeds, the weak ones must go to the wall, and the strong ones must suffer more keenly even than heretofore. English ironmasters may have expected some relief from us, but whatever hopes they may have cherished a few months ago must now be pretty thoroughly dispelled. As compared with our own country, Great Britain produces a smaller percentage of pig iron for steel purposes. The output of "hematite" iron was only 2,560,000 tons in 1885, against 2,770,000 tons in 1884 and 3,287,000 tons in 1883. For the first time basic pig appears in any notable quantity in the record, the product being 174,000 tons, chiefly smelted in the Cleveland district. The make of spiegeleisen and ferro declined to 141,497 tons in 1885, it having been 166,828 tons in 1884 and 208,445 tons in 1883. We believe, however, that the grade, on an average, taking the manganese contents as a basis, has risen, so that the falling off appears greater than it is in reality.

The statistics of the production of puddled bars show the effect of the combined influences of a falling off in the demand and of the pressure of the competition of steel, though the drop off in 1885 is not as heavy as it was 1884. Mr. Jeans reports that the product of puddled bars was 2,730,504 in 1883, 2,240,535 in 1884, and 1,911,125 in 1885. A large number of puddling furnaces seem to have been abandoned, there being only 4902 at the end of 1885, against 5241 a year previous. Even then only 3316 of them were in operation. While thus the puddling furnace lost ground absolutely and relatively, Bessemer converters and open-hearth furnaces widened their field. In the case of the former the gain is very moderate indeed. Mr. Jeans' figures show that while the make of Bessemer rails fell from 784,968 to 706,583 tons, the output of ingots was higher, rising from 1,299,676 tons in 1884 to 1,304,129 tons in 1885, including 145,707 tons of basic steel. A much sharper competitor of the puddling furnace in Great Britain is the open-hearth furnace. While every other department of the English iron trade receded markedly, or at best held its own, the makers of Siemens-Martin metal forged steadily ahead. In 1883 the product was 455,500 tons of ingots. It was 475,250 tons in 1884 and 583,918 tons in 1885. At the close of 1885 there were no less than 239 open-hearth furnaces in Great Britain, 36 being added during the year, while 24 more were under construction. In the face of the depressed condition of the English ship-building industry, the tonnage launched, 540,871 tons, being the smallest since 1868, is an exceptional record, and contrasts strikingly with the slow growth in recent years of open-hearth steel production in this country. What developments the near future may bring should Siemens-Martin

steel retain the preference for tin plates it is not difficult to predict. Mr. Jeans has no full returns covering the output of tin plates, but the exports alone were 298,887 tons in 1885. If the rapid substitution of steel for iron takes the direction of putting a large share of that outlet to the credit of the open-hearth works, then a further large increase seems inevitable.

It is much to be regretted that Mr. Jeans does not give some statistics of the capacity of the plant of the English iron and steel works. We appreciate the difficulties of such a task, and know that only a rough approximation is possible. Still the figures would be valuable as a guide in forming an estimate of what the English works could accomplish under the stimulus of high prices.

The Eight-Hour Agitation.

It is generally believed that something like a concerted effort to establish the eight-hour system will be instituted during the month of May. General Master Workman Powderly has disclaimed on behalf of the Knights of Labor, any such intention. In his famous circular letter to the assemblies of the United States he said:

It is evident that our members are not properly instructed, else we would not find them passing resolutions "approving of the action of our executive officers in fixing the 1st of May as the day to strike for eight hours." The executive officers of the Knights of Labor have never fixed upon the 1st of May for a strike of any kind, and they will not do so until the proper time arrives and the word goes forth from the General Assembly. No assembly of the Knights of Labor must strike for the eight-hour system on May 1, under the impression that they are obeying orders from headquarters, for such an order was not and will not be given. Neither employer nor employee is educated to the needs and necessities for the short-hour plan. If one branch of trade or one assembly is in such a condition, remember that there are many who are in total ignorance of the movement. Out of the 60,000,000 of people in the United States and Canada, our order has possibly 300,000. Can we mold the sentiments of the millions in favor of the short-hour plan before May 1? It is nonsense to think of it. Let us learn why our hours of labor should be reduced and then teach others.

This was reassuring at the time, but subsequent happenings are calculated to weaken public confidence in Mr. Powderly's ability to carry out his conservative policy or to speak authoritatively for the order. We have on our table a voluminous report of a mass meeting of Knights of Labor, held in Boston a few days ago, at which a great many vigorous and incendiary speeches were made, and the principal orator of the evening proclaimed that shorter hours for labor must be secured "at whatever cost or sacrifice, be it of life, privilege or what not." This sounds strangely when read in contrast to the official utterances of Mr. Powderly on this subject; but it is very evident that the several departments of the Knights of Labor are working at cross purposes, that the order is without adequate control or discipline, and that its aims and purposes are one thing in one place and another thing in another place. The striking fever is just now prevailing in a very malignant form, and, as it is not likely to subside before midsummer, it is more than probable that eight-hour strikes will furnish the newspapers with plenty of matter during the next few weeks.

If we can judge the opinions of the workmen from the utterances of those who are chosen to represent and speak for them, we should say that most of those who advocate the eight-hour demand believe that as the hours of labor are shortened wages will increase. One of the speakers at the Boston meeting already mentioned expressed this idea as follows:

The singular fact to which I wish to call your attention is this: That as we have asked for wages to go up, we have asked for hours to go down (applause), and, standing here to-night, remembering years ago upon a dozen seas on this stage a few of us gathered together—a few of them now in this audience, gray and bald in the service—gathering here at that time and preaching that gospel, I remember the face of a woman whose memory is dear to me and dear to the heart of every man that knew her, and if she never penned any more than this which I shall say she penned a truth as great as any written in Holy Writ:

"Whether you work by the piece or work by the day,

Reducing the hours increases the pay."

(Applause.) It is easy to remember, and there is a great truth hidden in it, for wages are not regulated by skill, as some suppose, for the greatest skill in the world is in China and Japan. It is not regulated by the hours of labor which a man works, for those who work the longest hours anywhere get the least for it, and those who work the least get the most, and those who do not work at all get the bonuses. (Applause.) Wages are regulated by the civilization, the objects and customs of society.

This would be very amusing reading if it were not that it expresses the views of hundreds of thousands of men who are probably ready to emphasize them by sacrifices which, however mistaken, are likely to be heroic. It is a case where arithmetic and argument have no weight. Men who believe that the productiveness of labor can be reduced 20 per cent. with immediate and incidental benefit to labor in increased wages, are not likely to be convinced to the contrary by anything which may be said or written. The idea is not a new one with them. The eight-hour agitation has been gaining headway for years and will not subside until experience has shown that the value of labor is in proportion to its productiveness. There is every reason to hope that the experiment will be tried under conditions which will not entail wrong or injustice to those who are not prepared to take the risk involved. There are a number of moderately successful co-operative manufacturing enterprises throughout the

country eight-hour satisfaction are all laborers' operators as wish to do so. has an un more than if he can much the of the eig these sta less ably men's hours or upon emp who may do so. W of thing a gands of The Amer suffering, work with tional right has had a One step m defense- above priv forcibly. do well to the eight-h ability labor riot and ki is possible the end no organization of labor, many trade reason why most trades ganize, but the instinc them togeth meet labor terms and Such a con to be inevit in the prese doubt as to

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country in which the practicability of the eight-hour system could be tested fairly and satisfactorily. If the resulting advantages are all that are claimed, employers of laborers working 10 hours cannot long maintain successful competition with the co-operators. It is also desirable that as many as wish to try the experiment be encouraged to do so. Every citizen of the United States has an unquestioned right to refuse to work more than eight hours in twenty-four, and if he can find employment on these terms so much the better. But the most incorrigible of the eight-hour cranks will recognize that these suggestions are absurd. Granted; not less absurd, however, is the claim of those menaces or attack those who choose to work 10 hours, or to boycott or otherwise impose upon employers who are willing to let them who may strike for eight hours, to annoy, do so. We have had too much of this sort of thing already. The Mohammedan propaganda of the sword was not more cruel. The American people are patient and long-suffering, but when aroused they make short work with those who infringe our Constitutional rights and liberties. Thus far labor has had a monopoly of the aggressive policy. One step more and it will find itself on the defensive. Mr. Powderly, in the extract above printed, states the truth briefly and forcibly. The wage-earning classes would do well to heed his prudent counsel. When the eight-hour system is an economic possibility labor will not have to strike, boycott, riot and kill to secure its benefits. Until it is possible violent measures will only hasten the end now threatened—the collapse of all organizations and the utter demoralization of labor. This has happened in a great many trades in times past, and there is no reason why it should not happen again in most trades. Employers do not readily organize, but they have begun to do so, and the instinct of self-protection will bring them together. When they are prepared to meet labor on its own ground and dictate terms and conditions, labor must surrender. Such a conflict is undesirable, but it seems to be inevitable, and if it comes there can, in the present state of public opinion, be no doubt as to the result.

The calculations entering into the design of a Prony brake of unusually large dimensions to which we give space in another column will repay examination. The engine to which the brake was applied was capable of developing over 540 horse power, and the problem accordingly presented to the gentlemen who undertook the work was one of grave importance and involved a number of considerations which with similar apparatus of customary size are of little moment. Professor Thurston, in presenting the calculations to the Franklin Institute a short time since, remarked very appropriately that probably no successful attempt had ever been made to control so powerful an engine with a Prony brake, although it had been employed at higher powers in connection with turbines. Smoothness of action, however, better adapted such motors to this system of management, while the irregular action of the steam pressure in the modern steam engine introduced difficulties of serious magnitude when it was attempted to thus handle its constantly varying efforts. The design as carried out by Messrs. Gately and Kletzsch accomplished all that was expected of it, and presents a striking illustration of the capabilities of the Prony brake.

In New England the advantages to be derived from organization among manufacturers seems to be appreciated. The cotton manufacturers are reported to have organized for mutual protection, and the knowledge of this fact has already stopped one important strike before it gained headway. The manufacturers of brass and iron steam and water fittings have also effected a settlement of certain labor difficulties by means of a very complete organization, and are in a position to defend any of their number from oppression or injury by organized labor. The example of these trades will have to be imitated in others. It is perfectly evident that so long as labor remains in its present unreasonable mood individual concerns cannot contest with such an organization as the Knights of Labor. When both capital and labor are represented by strong organizations they will regard each other with more respect than now, and the interests of both will be protected by arbitration when both sides have reason to dread conflict.

There is good reason to believe that the plan adopted in some cases by the Government, of sending officers abroad to gather information on foreign engineering methods, and to reap the benefits of their observations, is carried out in a careless and most unsatisfactory manner. Recent experiences have demonstrated beyond doubt that if the plan is to be of any value whatever to the Government the choice of the men taken for such work must be governed by somewhat more judgment and a more thorough appreciation of the requirements involved than have of late been brought into play. Every one who has given attention to the opinions expressed before a special committee of the House of Representatives a short time ago by a naval officer who had been sent to Europe at the Government's expense to study naval progress over there, has no doubt come to the conclusion that the ability

and desire to accomplish the desired object were by no means characteristic features of that individual. Evidently there are some Government officers not yet conscious of the fact that Government trips at Government expense were designed to result in the Government's profit, and are not generally supposed to be pleasure excursions for those who undertake them.

The foreign trade of the country during the first quarter of the year does not compare very favorably with that of its predecessors. The following table, which we compile from the monthly returns of the Bureau of Statistics, shows what business we have been doing during the first quarter of the years named:

First quarter.	Exports.	Imports.
1886.....	\$163,578,894.....	\$164,135,146.....
1885.....	185,871,272.....	137,325,149.....
1884.....	191,445,597.....	170,294,324.....
1883.....	224,887,312.....	194,052,319.....
1882.....	184,141,456.....	184,385,951.....
1881.....	226,811,563.....	153,753,425.....

For the first time since 1882 our imports have been slightly greater in value than our exports. We have been buying more during the first three months and have been selling considerably less than we did during the same period in 1885, when the balance was heavily in our favor.

Of the steam, gas, hot-air and petroleum engines which have been proposed and in part used as domestic motors the last has, until recently, been an object of little attention. Where gas is not available, and the use of steam is either undesirable or inadmissible, or where for several reasons a hot-air engine would fail to give satisfaction, the idea of using petroleum in a suitably designed motor has been regarded with special interest and has suggested a wide and promising field of usefulness. Since it was first put into practical shape, however, progress has been slow, and up to the present time results to which those who proposed to put petroleum engines on the market could point with pride or with even a small degree of satisfaction have been exceptional. Attempts have been made in many instances to use gasoline gas in some of the well-known types of gas engines now before the public, but in nearly all cases the disadvantages and inconveniences of excessive soot deposits, frequent cleaning of the engines and objectionable odors discouraged further efforts in that direction. Heating the vapor previous to its use in the engine cylinder has been suggested as an excellent remedy for some of these annoyances, and certainly seems to offer inducements worth considering. Nevertheless, its advantages, if there be any more real than apparent, seem to have been realized to only a very limited extent. Under the circumstances it is a matter of general interest to note that in Germany the study of the petroleum engine has been taken up actively, and according to all accounts with encouraging results, and an engine is now put on the market there and has also been introduced into England for which a promising future is proclaimed. From the descriptions which have reached us, however, the motor would seem to possess few features to which a specially good result could be traced. It may be well doubted, therefore, whether the users are or will be as well satisfied with it as the general public is now led to believe, and the efforts aiming at its extensive introduction are interesting chiefly because of the attention which they direct to the subject, and which eventually may lead to something of real merit.

Labor disturbances often raise questions respecting the limits of the law as to what may be the rights pertaining to person and property. On various points the courts are diffusing useful information. "Labor organizations," says Judge Pardee, of Texas, "have no legal status or authority, and stand before the law on no better footing than other voluntary organizations, and it is preposterous that they should attempt to issue orders that free men are bound to obey. No man can stand before a court of justice and shelter himself behind any such organization from the consequences of his own unlawful acts."

"Undeveloped Water-Power."

To the Editor of The Iron Age.—DEAR SIR: A brief article in your issue of the 15th inst. has drawn my attention to the subject referred to. A water-power to be valuable must be sufficient in power and available, or else it is cheaper to use steam-power. Many of the very largest establishments in this country had their beginnings on water-powers in their early days, never having calculated on using thousands of horse power, or of growing from a capital of, say, \$100,000 to millions, as a very large number have done in the past 20 to 30 years. Among the valuable and nearly undeveloped water-powers suitable for manufacturing cotton, woolen, silk, iron, paper or other goods, which are located on first-class lines of railroads leading to New York and Philadelphia, with cheap and quick transit, may be mentioned the Morris Canal, in New Jersey, running alongside of the Morris and Essex Railroad nearly the whole distance from Easton, Pa., to Jersey City. It has a fall of over 900 feet from its summit reservoir to Jersey City tidewater, and over 700 feet from the same to Easton, Pa., on the Delaware River. This power is already constructed, and is probably equal to over 50,000 horse-power, and ought to be by law utilized for manufacturing purposes of all kinds at a very early

day. Then, again, there is the great power on the Delaware River, known as Rifton, near Belvidere, N. J. It controls the whole power of the Delaware River, having a fall of 23 feet, easily to be turned into raceways, having a perpetual charter, and is right alongside of the Belvidere Delaware Railroad, a part of the Pennsylvania Central system. This power is said to be much better than that of Lowell, Mass., and is safe because it is easy to protect factories that might ever be erected on it. Then, again, there is Warren County, N. J., alongside of the recently constructed Lehigh and Hudson Railroad, the Pequest River having a fall of 230 feet in 10 miles, and so far only driving half-a-dozen flouring mills and a few factories. There are many other smaller powers unemployed, but these are located in one of the fairest portions of the Eastern States. On account of its varied agricultural production, its scenery and its healthy climatic influences, no portion of the Union of the same size has better facilities for reaching markets, fuels of all kinds, and good and cheap living for operatives. Yours very truly, C. S.

April 19, 1886.

WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., April 27, 1886. There is some difference of opinion as to the time for commencing the discussion of the Morrison tariff bill. The beginning of May was first proposed, then May 15, and now there is a question whether the consideration should not be delayed until after the appropriation bills shall have been disposed of. This looks very much as if the Morrison managers are not certain of their ground. In regard to the appropriation bills Mr. Randall says that he is ready to proceed with them when other matters are out of the way. On his part it looks as if he were holding these bills back so as to bring them in at a time when they will consume the entire remaining days of the session and by that means crowd the tariff bill off the track. In conversation with the correspondent of The Iron Age Mr. Randall said to-day: "We succeeded in striking the metal schedule out of the bill in committee, and now we will strike free wool out in the House. Then the bill may be less dangerous. I think that the Eastern Pig Iron Association cannot complain. Their action was to the point and had its effect. The iron interests of this country owe much to their work, because they stood up squarely on the issue against any reduction in the tariff on iron in any shape."

"What strength can you muster against the bill?" "As the bill now stands it will be defeated by at least 20 majority. I do not think that it would be prudent to name the men, but they will be on hand when needed. You can put it down that wool will not go on the free list this time."

The House Committee on Commerce, in reporting favorably the Drummers' Tax bill, say that certain laws in different States, Territories and the District of Columbia, imposing license fees on commercial travelers from other States, seem to discriminate against citizens and products of other States, and that in the confusion of such laws the free interstate commerce which is designed under the Constitution is interfered with and restrained. The committee concede the right of a State to tax its citizens engaging in any business, but deny that the State has the right to lay a duty upon importation from one State into another under the name of a license tax or penalty, "although she (the State, Territory or District) at the same time provides for the same tax equally upon residents and non-residents." "Such laws," say the committee, "although not discriminating in favor of residents and non-residents, are in conflict with the Constitutional power of Congress to regulate commerce between the States." Judicial decisions in support of this position are cited, and the report states explicitly that the object of the bill is to prevent any State, Territory or the District of Columbia from requiring a license from those who are exclusively engaged in interstate commercial transactions. The report concludes as follows: "The contracts for sales made by commercial travelers are not consummated in the State when the order is solicited, but the final assent thereto is given by the merchant or principal who receives and executes the order of his correspondent. This trade is now carried on without objection by postal communication and samples by mail, and it is not perceived why the same thing executed by a commercial traveler in person is in any way objectionable."

CUSTOMS DECISIONS.

The Secretary of the Treasury has rendered the following decisions upon the constructions of acts of Congress relating to the tariff:

MINERAL OILS.

That mineral oil distilled from shale is dutiable at the rate of 25 per cent. ad valorem, under the provision in Paragraph 92, act of March 3, 1883, "for distilled oils * * * not specially enumerated or provided for."

DUTYABLE AS IRON FORGINGS.

In the appeal from an assessment of duty at the rate of 45 per cent. ad valorem on so-called "iron hooks and holdfasts," the appellant claiming 2½ cents a pound, the department says: "The merchandise appears from the report of the appraiser to consist of forged iron hooks, (varying in length, say, from 2¼ to 3 inches) manufactured for the use of plumbers, and the appraiser at Boston reports that after a careful examination of the samples submitted with your letter he is of the opinion that the hooks in question are dutiable as iron forgings, under the paragraph cited; that they are iron hooks forged by hand or with a hammer and die to make the shape of each size uniform, and are specially provided for in said paragraph."

"As the language of the paragraph cited is very comprehensive, and covers forgings of iron of whatever shape, &c., the department is of the opinion that the appeal is well taken, and the articles are dutiable as iron forgings."

DUTYABLE AS CUTLERY.

An appeal having been taken against an assessment of duty at 45 per cent. ad valorem on certain spatulas claimed to be dutiable at 75 per cent. as "cutlery not specially enumerated or provided for," the department decides that upon investigation it is found that the articles in question, which are knives with flexible blades and dull edges, and are used by druggists in the mixing of medicines, and by artists in mixing colors on their palettes, are manufactured by cutlers, and are commercially known as "cutlery." The department is therefore of opinion that, as they are not otherwise specially provided for, they are properly dutiable as cutlery and a refund of the excess of duty is authorized.

STEEL TUBES FOR UMBRELLA HANDLES.

The collector having assessed duty at 40 per cent. and the appellants claiming 2½ cents a pound on so-called steel tubes for umbrella handles, the appraiser at New York reports that it is the practice to classify said merchandise for duty under T. I., new, 491, as "umbrella handles, or parts thereof, made in whole or chief part of iron, steel or any other metal," dutiable at 40 per cent. ad valorem; that the merchandise in question does not constitute wrought-iron or steel tubes or pipes, as claimed by the appellant, and that if not umbrella handles or parts thereof, but manufactured for other uses and purposes, as claimed by the appellant, they would be dutiable as manufactures of iron or steel and brass, at the rate of 45 per cent. ad valorem, in accordance with department's decision of October 21, 1885. The appraiser was sustained.

SYNOPSIS OF LATEST DECISIONS.

Where the value of the goods *per se*, as returned by the appraiser, is 10 per cent. greater than the value stated in the entry, additional duty accrues under Section 2900, Revised Statutes, regardless of the fact that the importers, by excessive additions for costs of coverings and other non-dutiable charges, may have made the sum total of the entry equal to the sum total of the appraiser's return.

The American Society of Mechanical Engineers.

The programme of the spring meeting of the American Society of Mechanical Engineers has been issued. The meeting will be held in Chicago, Ill., beginning Tuesday, May 25, and adjourning Friday, May 28. The headquarters of the society and secretary's rooms will be at the Grand Pacific Hotel. The opening session will be held at the Grand Pacific Hotel on May 25 at 8 p. m. An early adjournment will give time for the supper and reception tendered to the society by the Local Reception Committee.

A business session for reading and discussing papers will be held on Wednesday morning, May 26, at 10 o'clock, and also one at 2 p. m. In the evening at 7.30 a complimentary dinner will be tendered by the Local Reception Committee at the Grand Pacific Hotel.

Thursday, May 27, will be devoted to an excursion tendered by the C. B. and Q. R. R. The train will stop at the Stockyards, where the members will have an opportunity of visiting the large packing-houses and seeing one of Chicago's greatest industries. From the Stockyards the train will proceed to the city of Pullman, where the works of the Pullman Palace Car Co. will be visited, and thence the train will proceed to the works of the North Chicago Rolling Mill Co., at South Chicago, where the members will witness the manufacture of steel rails after dark, and returning from there the train will arrive in Chicago at 9.30 p. m.

A morning session on Friday will be devoted to the reading of papers and discussion. In the afternoon at 2 o'clock carriages will be provided by the Local Committee for the purpose of giving the members of the society an opportunity of seeing some of the attractions of the city, or visiting some of the engineering establishments, as they may elect. In the evening the last session will be held for papers and discussions and for general business. This final session will adjourn on Friday in time for every one to catch the evening trains to the East, as by the train schedules. A programme will be provided by the Local Committee, giving the details of the excursion, carriage rides, &c. The following papers will be presented for discussion at this meeting: "Wilfred Lewis, 'Experiments on Transmission of Power by Belting';" William O. Webber, "Relative Efficiency of Centrifugal and Reciprocating Pumps;" Horace See, "Production of True Crank Shafts and Bearings;" George H. Babcock, "Substitutes for Steam;" Charles W. Barnaby, "New Steam Engine Indicator;" F. G. Coggin, "Novel Chimney Staging;" Thos. S. Crane, "Water Purification for Manufacturing and Domestic Consumption;" H. R. Towne, "The Engineer as an Economist;" H. Metcalfe, "Shop Orders and Accounts;" C. M. Woodward, "Manual Training Schools;" O. Smith, "Inventory Valuation of Machine Plant;" Fred. W. Taylor, "Value of Water Gas and Gas from Siemens Producers for Melting in Open-Hearth Furnaces;" Wm. P. Trowbridge, "Ventilation by Heated Chimneys and Fans;" Thos. D. West, "Irregularities in Contractions of Duplicate Castings;" C. M. Giddings, "Dynamometers for Measuring Power Required to Move Slide-Valves;" John H. Cooper, "Grain Handling in California." Subjects and queries will be presented also by the Committee on Topical Discussions, which have proved so interesting and valuable a feature of the recent meetings.

Charles W. Hubbard, of Pittsburgh, Pa., has been granted a patent for making axes, which consists in slitting the blank from its rear end, opening up the eye part and then closing the open rear end by inserting a bit of metal.

John T. Jones, of Iron Mountain, Mich., has invented a plate or blank for the manufacture of staples. He has assigned one-half of the patent right granted to him to Peter L. Kimberly, of Sharon, Pa.

The "Holy Cause of Labor."

We publish below a most instructive correspondence, which needs no editorial comments to make its meaning plain and enforce its lesson:

EVANSVILLE, IND., April 10, 1886.

Messrs. J. H. Roelker & Co.—DEAR SIR: At the request of the Iron Molders' Union No. 51, which is a branch of the Central Labor Union, and which body comprises all trades and labor organizations of the city, the Central Labor Union, through its committee, beg to call your attention to the fact that you are hereby notified to quit handling prison-made goods of any and all descriptions, and you are further notified to run hereafter a strict union shop, and in accordance with union rules. We expect an answer from you within the next 48 hours whether or not you intend to comply with the above. Should you reply in the negative, or fail to within the specified time, we shall be compelled to institute a "boycott" against your firm at once. The committee is ready to meet any of the firm to receive the answer.

By order of the Central Labor Union.
THE BOYCOTTING COMMITTEE.
Received April 12, 1886, at 9 a. m.

EVANSVILLE, IND., April 14, 1886.

Central Labor Union, care Martin Koepke, City.—In answer to your requests of the 10th inst., viz.:

"1. To quit handling prison-made goods," We have to say that no laborer in the city has any greater objection to prison-made goods than we have, and we are anxious to see it abolished, and are, therefore, willing to accede to the request (after the present stock on hand is exhausted).

"2. To hereafter run a strictly union shop."

As our foundry department is now closed for an indefinite period, we are not in position to answer that question, but it shall be fully considered before starting up that department. Respectfully,

J. H. ROELKER & CO.

EVANSVILLE, IND., April 16, 1886.

John H. Roelker & Co.—DEAR SIR: Yours of April 14, 1886, to hand, and in reply beg to inform you that while we are quite satisfied with your reply to the first request, viz., "To quit handling prison-made goods," we must state that we cannot say the same as regards your answer to the second request, viz., "To hereafter run a union foundry." Your answer to this is not definite, and we ask again, Will you, when resuming operations at your foundry, run a union foundry, and in accordance with union rules? We shall await an answer from you by Saturday, April 17, 1886, at 2 o'clock p. m., the latest. Should your reply be in the negative, or should you fail to reply within the specified time, we shall be compelled to adopt the course suggested in our first letter. Respectfully,

By order of the Central Labor Union,
THE BOYCOTTING COMMITTEE.

EVANSVILLE, April 17, 1886.

Central Labor Union, care Martin Koepke, City: Yours of the 15th to hand. As regards your question, "If we will, when resuming operations in our foundry, run a union foundry and in accordance with union rules," we have to say that your request is unreasonable and unjust. As stated in ours of the 14th inst., we have shut down our foundry departments for an indefinite period, and that we cannot say what our future course will be. Respectfully,

J. H. ROELKER & CO.

Immediately on receipt of this letter the Fund Committee of the Central Labor Union and Iron Molders' Union No. 51 met to consider it. The answer of the firm not being satisfactory, the joint committee unanimously agreed to declare a boycott against Messrs. J. H. Roelker & Co., which will be put in force at once.

NEW PUBLICATIONS.

GEOLOGICAL SURVEY OF NEW JERSEY. Annual Report of the State Geologist for the year 1885. Geo. H. Cook, State Geologist.

The present volume is a record of the work done by Professor Cook and his assistants during the past year. The work of surveying and mapping the State has been going on for 11 years, and will require about two years more to complete it. A small map of the State, which is presented in the body of the book, is sectioned in such a manner as to show what parts of the State have been surveyed and mapped. In the second division of the volume interesting maps are given of some of the New Jersey beaches. A map of Sandy Hook, marked with the different survey lines from the survey of 1865 to the one made last year, shows the great changes which that beach has undergone. The third chapter, headed "Economic Geology," is one of the most interesting in the book. It opens with a review of the mining industry of the State, and contains short reports of the different mines. Considerable space is devoted to the subject of water supply from artesian and other bored wells, the depth, flow and quality of water from a number of wells being given, as well as complete analyses of the water in several instances. Part 4 of the report contains historical notes on the geological surveys of New Jersey. The work closes with a list of the publications of the survey, statement of expenses, &c.

The Deutsche Industrie Zeitung has lately called attention to the calorific value of different fuels, and has published a table of the comparative power of heating possessed by various woods, one part of white beechwood being taken as the standard. This is estimated to have the same heating power as 0.99 maple, 1.03 red beech, 1.04 oak, 1.13 ash, 1.17 birch, 1.43 pine, 1.45 fir, 1.667 alder, or 1.99 willow. It is further estimated that 119 cubic feet of beechwood or 53½ cubic feet of superior coal equal, in calorific power, 629 cubic feet of bad peat, 297½ cubic feet of medium peat, and 164 feet of good peat, while 125 cubic feet of pine wood or 46½ cubic feet of good coal equal the calorific power of 507, 243 and 138 cubic feet of peat in three grades specified. Where not otherwise stated these figures apply to good qualities.

(Concluded from page 1.)

is limited by the exhaust port *p*. The tilting of the beam *L* closed the valve *h* by means of the connection *k n*. The hopper having discharged its contents into the furnace, the lever *l* is reversed; this connects cylinder *D* with the exhaust *q s o*, and turns the live steam into the pipe *d h i e f* communicating with cylinder *A*. Valve *h*, however, being closed, its flow is stopped at that point; *h'* being open, *D* is exhausted and the weight *W* brings the bell to its seat. At this moment valve *h* will have been opened by the connection *k n* with the beam *L*, steam passes into cylinder *A* and raises the lids and at the same time closes the valve *h'* by means of the connection *r m x*.

When the hopper is again charged through the open charging ports, the lever *l* is again turned into the position shown, directing the live steam toward cylinder *D*; its flow is checked, however, at *h'*; at the same time, connecting *A* with the pipe *q s o*, it exhausts, the piston sinks and the lids are closed; at this moment valve *h'* opens, steam enters *D* and the contents of the hopper are discharged into the furnace, as shown. Thus it is seen that the operation of the seal is perfectly automatic and requires no extra labor to manipulate it. It can neither be neglected nor misplaced, and consequently the furnace is never open and no gas is permitted to escape. The advantages of a gas seal are manifold and its economical value much greater than would at first sight appear. The saving of the gas which ordinarily escapes while lowering the bell is most striking. The amount of gaseous fuel thus lost is relatively greatest in small furnaces. In the large ones of modern design it has been sought to reduce the loss of gas by increasing the size of the hopper and thereby reducing the number of discharges. The escaping gas is not only so much fuel lost in itself, but also involves indirect losses of fuel—first in the furnace stack, by the dilation of the gaseous contents and the loss of sensible heat carried off by the escaping gases. Besides, when the gas escapes at the top of the furnace, while lowering the bell, there is a current of cold air into the combustion chambers of the hot-blast stoves and under the boilers. This has a cooling effect which causes an additional loss of fuel. The items of fuel which are saved by a gas seal, although small per ton of iron, will still amount to several times the cost of a seal in a single blast. It is furthermore not to be overlooked that a device which shuts off the gas and requires no extra labor must be a boon to the "top-filler," who is ordinarily more or less exposed to the noxious gases. A still more important office the gas seal performs is that of a preserver of several of the most vital parts of a furnace plant. It preserves the bell and lip ring, since it renders almost impossible the ignition of gas from small leaks, the chief source of warping and burning. It secures a constant flow of gas into the hot-blast stoves and under the boilers, and thereby avoids the most effective cause of destruction to those appurtenances, expansion and contraction due to the intermittent flow of gas.

Much attention has been paid by furnace managers and engineers to attain proper distribution of the stock in charging it into the furnace. To reach this end it has been found necessary to proportion the diameter of the bell to the size of the furnace. This has led to very ponderous bells and lip rings; making them difficult to construct and still more difficult to replace over a hot furnace. The sectional bell and hopper, of which Fig. 2 shows a sectional elevation, have been designed with a view of overcoming these difficulties and of insuring the best distribution of the stock possible. For the latter purpose the discharge opening of the hopper is reduced as much as is consistent with a free discharge of the stock. This compels it to fall upon the apex of the bell and distribute itself evenly in the furnace. Since the law according to which hoppers with a central opening discharge their contents compels a concentric movement, they are turned outside in, as it were, and the different ores and flux are most thoroughly mixed. The accompanying sectional view of the hopper shows its construction so clearly that detailed description may be dispensed with, and we will only stop to point out a few of its principal features. The machine work required in its construction is reduced to a minimum. Provisions are made for securing gas-tight joints by packing with borings. The hopper is provided with two lip rings and the bell is composed of two parts. By this means the weight of the machine-fit parts, the inner lip ring and apex of the bell, are reduced. The lower part of the bell or apron is lined with fire-proof material, which protects it against excessive heat from the incandescent stock which may in abnormal conditions of the furnace exist below the bell. The dreaded task of replacing a burned or worn-out bell and lip ring over a hot furnace becomes comparatively easy. Only moderate weights need be handled. The apron, which it will be necessary to remove only in very exceptional cases, is drawn up to the second ring and fastened, making a joint with it, after which the apex of the bell and small ring are easily removed and replaced by new ones. The whole is performed over a closed furnace.

We are informed by Mr. E. A. Uehling, of Sharpsville, Pa., who is the inventor of this apparatus, that the gas seal has been successfully used at the Douglas Furnace No. 2 of Pierce, Kelly & Co., Sharpsville, for over a year, and at the Sharpsville Furnace, also at Sharpsville, since it was rebuilt.

The Organization of Manufacturers.

The Boston *Commercial Bulletin* says: "The sudden and unexpected collapse of what threatened to be a serious strike at the Whittenton Mills, Taunton, was caused by the discovery that that mill belonged to a huge organization of textile industries of New England, which has been formed so quietly that it has escaped all notice. This organization extends over Rhode Island and Connecticut, and already includes 49 large woolen mills, with such cotton mills as the Lonsdale and Hope Mills. This society was

organized for mutual protection. It does not recognize the authority or dictation of Knights of Labor in any way, but is prepared to use arbitration in the settlement of strikes. The organization is growing in numbers, and it proposes to give each strike consideration and to assist only those manufacturers who are unfairly treated by their help. A second society, embracing all cotton mills of any importance in Maine, New Hampshire and Massachusetts, was quietly completed and elected its officers in Boston on Wednesday. The Massachusetts league is the league of cotton mills to which woolen mills are to be admitted, while the Rhode Island society was formed by woolen mills and subsequently admitted cotton manufacturers. During the last month the cotton mills of this State have been quietly preparing for organizing for mutual insurance against labor disturbances. The cotton-manufacturing industry is better adapted for the formation of such an organization than many others, because it is composed of a number of large mills rather than a large number of small ones. The quiet organization which has taken place, therefore, has been conducted with much expedition, and its result will probably be witnessed at the next attempt of the mill hands to secure the discharge of workmen who are not members of the union. The entire woolen, as well as the entire cotton, interest of the three States will be included. The society have taken the form of a mutual insurance company organized on the basis of the respective pay-rolls of their members. The society are not a corporation and have no stock. The yearly pay-rolls of the Massachusetts mills that have already joined amount to \$15,000,000. Plain cottons, colored cottons, prints and ginghams are all represented in the list of members, and

Bros. & Co. then turned the whole affair over to the hands of the association, and no sooner did the men discover the strength of the organization with which they were dealing than they withdrew all their demands and returned to work.

The Recent Changes in the Canadian Tariff.

Mr. J. Johnson, Commissioner of the Customs Department at Ottawa, has issued a circular to appraisers, under date of March 31, giving the new tariff rates as below on a series of articles in which readers of *The Iron Age* are interested:

Bolts, nuts, washers and rivets of iron or steel, a specific duty of 1 cent per pound and 15 per cent. ad valorem.

Cordage, Manila and sisal cordage of all kinds, a specific duty of 1 1/4 cents per pound and 10 per cent. ad valorem.

Gas, water and soil pipes of cast iron, 30 per cent. ad valorem.

Harness and saddlery of every description and parts of the same, 30 per cent. ad valorem.

Lead-pipe and lead shot, a specific duty of 1 1/4 cents per pound.

Tubing, wrought iron, plain, 2 inches in diameter or under, coupled or threaded or not, 30 per cent. ad valorem.

Wire, iron or steel, galvanized or not, 15 gauge and coarser, 20 per cent. ad valorem.

Wire fencing, buckthorn, strip and other similar fencing wire of iron or steel, a specific duty of 1 1/4 cents per pound.

Schedule B, being the list of goods which are entitled to entry free of duty when imported to Canada, has been amended

is reported to be from 23 to 90 feet wide, and the south vein 40 to 140 feet.

A Unique Entertainment.

The following account of a quite unusual entertainment given by the Withington & Cooley Mfg. Co., Jackson, Mich., to their workmen will be read with interest. It was on their annual celebration day, which in accordance with a long-established usage the company are accustomed to observe:

At 2 o'clock the hands at the Penitentiary engaged on the work of this firm, numbering 450, were ushered into the chapel, where they were presented with a sight that has never before taken place in a prison. Manager Starr and his opera company had built a perfect stage and decorated it with the settings and complete scenery that they use in producing the Mikado around the country. The chapel gallery was crowded with spectators, many of them ladies. Before the overture Warden Hatch addressed them as follows: "During the entertainment we are about to listen to I have decided to allow you to express yourselves as you wish. I am not going to require any reports for talking, so you may converse as you wish. I do this, of course, confident that you would not talk any if I did not tell you you could. (Laughter.) When Mr. Starr first came here he invited us to come down to the opera house and hear his company play, but as it is the style now to go in a hack, and as it was not possible to secure carriages for all, we returned the compliment and asked him to come up here. I might perhaps also remark that in no case will any one have occasion to 'go out to see a man' between the acts." (Laughter and applause.)

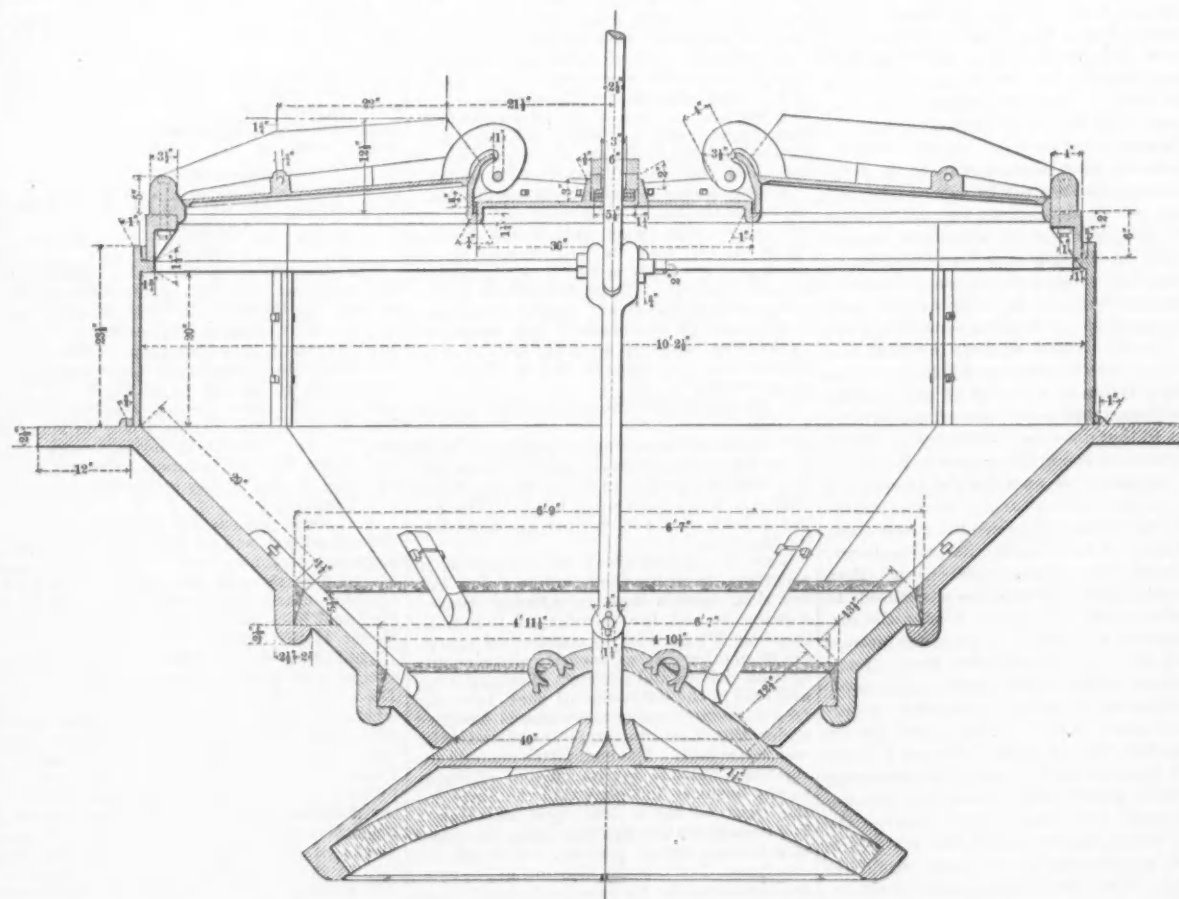


Fig. 2.

THE UEHLING SECTIONAL BELL AND HOPPER.

every leading cotton mill in the State has already joined. The aims of the society are not in any sense aggressive, and their purpose is not to attack the Knights of Labor, but simply to protect their members against unjust persecution. The methods of self-defense which the society will employ have not yet been made public."

From firms interested we have an account of the organization of a protective league among the brass-goods manufacturers of the United States. The league includes the manufacture of brass and iron steam and water fittings, and is said to include 98 per cent. of all the capital invested in this business. Nearly 50 firms are already enrolled in the membership, employing not far from 10,000 men. Mr. A. F. Foster, of the United Brass Co., is president. A list of the firms is printed in our Trade Report this week. The organization was effected for the ostensible object of establishing uniform prices, but now makes announcement of its intention to protect the trade against the unreasonable demands of organized labor. Their attitude will be defensive, not aggressive. They will not antagonize the Knights of Labor, nor will any reasonable and proper demand of labor be refused; but any attempt to dictate to manufacturers who shall be employed or how their business shall be conducted will be resisted vigorously. "In our organization," says Mr. Foster, "we have a mutual insurance plan. In case of a strike the manufacturer will receive a benefit to an amount graded by his pay-roll. All our workmen are Knights of Labor, but we make no objection to that. We want fair play, and they will find out who is who. We favor arbitration and desire to avoid all trouble."

Only a few days since the effectiveness of this organization was shown in a most striking manner. The workmen of Peck Bros. & Co., of New Haven, had demanded an advance in wages, the re-employment of one of their number who had been discharged for disobeying orders, besides certain changes in the method of conducting the works. At first the company tried to adjust the difficulties themselves, and with that object in view offered concessions to the workmen. All their endeavors, however, proved fruitless, and there appeared to be every prospect of a long and bitter struggle. Peck

by substituting the following provisions for the items now contained therein:

Articles for the personal use of consular general who are natives or citizens of the country they represent, and who are not engaged in any other business or profession.

Iron and steel, old and scrap, but nothing shall be deemed scrap iron or steel except waste or refuse iron or steel that has been in actual use and fit only to be remanufactured.

The Harlem River Bridge Commissioners on Thursday last received 15 bids for the proposed bridge across the Harlem. Five contractors offered to do the metal-work. Their bids were: The King Iron Bridge and Mfg. Co., \$1,180,000; Phoenix Bridge Co., \$1,116,000; Union Bridge Co., \$687,500; the Passaic Rolling Mill Co., \$880,152; and the New Jersey Steel and Iron Co., \$899,155.23. The lowest bidder for the mason-work was John McQuade, whose offer was \$1,093,407, and the lowest for the metal-work was the Union Bridge Co., at \$687,500. These two offers would make the whole bridge cost \$1,780,907. Two or three months ago the Union Bridge Co. submitted a private proposition for a stone and concrete bridge, offering to build it for \$2,683,000, figuring the substructure at \$1,400,000 and the superstructure at \$750,000. The plans were then changed, and a public letting was declared, with the result indicated. The bridge, which has its New York approach at the intersection of 181st street with Tenth avenue, will be 2373 feet long, with masonry approaches. It will have two steel spans 508 feet each in the clear, and will be 150 feet above the water, giving room enough for shipping to pass safely underneath. The top of the bridge will be 80 feet wide, with boulevard driveway and sidewalks for pedestrians. It is to be finished in two years from June 1.

Messrs. Moore, Benjamin & Co., dealers in iron mines and iron mining stocks, Milwaukee, Wis., and Hurley, Wis., have published a map of the Gogebic iron-ore range, which has during the past few years loomed up as one of the new producing sections. According to Moore, Benjamin & Co., there are two apparently continuous veins of ore running parallel about 350 feet apart for a distance of about 25 miles. The north vein

The company then gave their excellent presentation of the Mikado. It was the free gift of the kind-hearted proprietors, Starr & Deshon. At first the convicts, unaccustomed as many were by long years of confinement to engaging in any amusement so worldly, sat with the vacant stare and listlessness that characterizes their sepulchral existence. Gradually they become lost to their surroundings and felt in the world again. Their features brightened up and they gave evidence of their appreciation by much applause. But some of the ideas brought out in the opera had been introduced into this mundane sphere long since they had been deprived of it, and they utterly failed to catch on. Noticeable was that of the telephone business, in which Ko-Ko winds up the Lord High Chamberlain. Telephones were a conundrum to most of them.

Sig Torriani, the conductor, who led from the piano, said: "When I returned from Europe, where I finished my musical education, I appeared at the Academy of Music in New York with the Philharmonic Society. I was a very young man, and it was my first appearance. I had to play a piano solo before the elite of the metropolis. I was naturally nervous. But in all my experience I never felt the deathly sensation that came over me when I entered that chapel to play the overture to the Mikado. I felt that I was about to try to amuse men who had not been amused for years. When I looked upon their hard, stony faces I exclaimed within me, 'Great God, we can never move these people to smile.' It was like playing a song and dance at a funeral ceremony."

The opera singers themselves seemed slightly out of place at first, but soon became accustomed to the situation and enjoyed the novelty of the situation. Frank Deshon, who is inimitable in the character of Ko-Ko, kept the prisoners in constant merriment, and they demanded four repetitions of his grotesque dance to "The Flowers that Bloom in the Spring." After the performance the men and invited friends of Withington & Cooley, with the opera singers, went to the dining-room, where a splendid oyster dinner was served them. This terminated the ceremony at the prison, and all retired feeling that they had spent a pleasant and profitable afternoon.

Obituary.

HENRY P. M. BIRKINBINE.

One of the best-known and most honorable hydraulic engineers of the country, Henry P. M. Birkinbine, died at his home in Philadelphia, on the 21st inst., at the age of 67. Mr. Birkinbine was a native of Reading, but removed to Philadelphia in 1844. He learned the machinist trade, and carried on the business for himself and in partnership with others for 12 years. Since 1856 Mr. Birkinbine has devoted his entire attention to designing and constructing public works, particularly those pertaining to the water supplies of cities. Among the works he designed or constructed were water works at York, Williamsport, Erie, Oil City, Chambersburg, Lebanon, Bloomsburg, Lewisburg, Pa.; Long Branch and Gloucester, N. J.; South Bend, Ind.; Council Bluffs, Iowa. He also enlarged the water works at Reading and Harrisburg, Pa., and Camden, N. J. He prepared the plans for six of the water-power pumps at the Fairmount Works, the large pumping engine at Roxborough and the original machinery at the West Philadelphia and Germantown Water Works. Mr. Birkinbine was elected chief engineer of the Philadelphia Water Department in 1857, and continued in that position till 1862. He again served in the same position from 1863 to 1866. In his first report he called attention to the necessity of preserving the purity of the Schuylkill River, and the probable necessity of looking elsewhere for a permanent supply. Several times he referred to the pollution of the river by sewage entering at Girard avenue, Manayunk and elsewhere. He made two hydrographic surveys of the Fairmount Pool, and asked for authority to protect the pool of the water. During his administration he constructed the extension of the Fairmount Works, built the water towers, completed the Roxbury Works, rebuilt the Fairmount Dam, laid a large quantity of large main pipe in the built-up portions of the city, and presented a preliminary report on the future water supply of the city, which has been the basis for future reports. For 40 years he has been a member of the Franklin Institute. He was actively engaged in business up to his last illness. He was an elder in Princeton Presbyterian Church, and a trustee of the Presbyterian Hospital. He leaves a wife, one daughter and two sons—John and Henry Birkinbine.

WILLIAM H. HIBBERD.

Mr. William H. Hibberd, of Philadelphia, long and favorably known from his connection with the iron and metal trades of that city, died suddenly on Friday, April 23, after a brief illness. Mr. Hibberd was a member of the firm of William F. Potts, Son & Co., well known in the trade as dealers in iron and metals. He first entered their employ nearly 34 years ago, and by untiring industry and faithful performance of duties rapidly won his way to the confidence and respect of his employers, and in 1869 was admitted as a member of the firm. Mr. Hibberd was a zealous and conscientious worker, a man of sterling worth and character, and was honored and respected by a wide circle of friends and business acquaintances. At a special meeting of the tin-plate trade, held in Philadelphia on the 26th inst. to take action on the death of Mr. Hibberd, the following resolutions were unanimously adopted:

Whereas, In the death of our late associate we feel that we have met with a very severe loss;

Resolved, That we wish to place on record our appreciation of him as a man of sterling integrity, unvarying courtesy and earnest endeavor, and that in his loss we shall miss the companionship of a wise counselor and faithful friend.

Resolved, That we always recognized in him a man who was ever guided by a strict sense of justice and fidelity to every duty entrusted to him, and who was always ready and anxious to harmonize any conflicting element.

Resolved, That we tender to the family our sincere sympathy in their sudden bereavement.

Resolved, That we extend to the firm of Messrs. W. F. Potts, Son & Co., of which he was so long an active member, our sense of the great loss they have sustained in the death of so faithful and valuable an associate.

Resolved, That a copy of these resolutions be sent to the family, and also to the firm of Messrs. W. F. Potts, Son & Co.

Resolved, That we attend his funeral on Monday, 26th inst.

NATHAN TROTTER & Co.,
R. & G. TAYLOR Co.,
HALL & CARPENTER,
MERCHANT & Co.,
GUMMEY, SPERLING INGRAM & Co.,
P. B. CALVERT & Co.

Mr. Hibberd was president of the Iron Merchants' Association, and at a meeting of that body, held in Philadelphia, 27th inst., the following preamble and resolutions were adopted:

Whereas, We hear with great sorrow of the death of our esteemed president, William H. Hibberd, of the firm of W. F. Potts, Son & Co.; therefore,

Resolved, That in his death this association has lost a valued officer, whose uniform courtesy and kindness have endeared him to us all, one whose integrity and business ability we all might emulate.

Resolved, That we extend to his family our sincere sympathy in this time of deep affliction.

HORACE T. POTTS, Secretary.

A new iron steamship called the Newburg was launched by Neff & Levy, in Philadelphia, last week, for the Ramsdell Transportation Co. She is to run between New York and Newburg, and will cost \$150,000. Her dimensions are: 210 feet in length, 32 feet beam, 12 1/2 feet depth of hold. The engines are compound surface condensing propellers of 1000 horse-power, the high-pressure cylinder being 26 inches diameter and the low-pressure 45 inches. The boilers are placed entirely below deck, are 9 feet 6 inches in diameter, 20 feet long, and will carry 100 pounds pressure. The vessel is made especially to withstand river ice, and is estimated to make 17 miles an hour. There are five water-tight compartments, any one of which can be closed in case of accident to any part of the vessel, and thus save the adjoining ones from filling with water.

A patent has been granted to Walworth M. Mooney and Herbert Estes, of Ausable Chasm, N. Y., for a horseshoe-nail finishing machine. We are informed that this machine has been in successful operation at the Ausable Chasm Horse-Nail Works of Messrs. W. H. Mooney & Co., turning out 95 nails per minute.

Clamps.
Woodruff, Miller & Co., Mt. Carmel, Ct. 15

Clock Springs, &c.
Dunbar Bros., Bristol, Conn. 7

Coal.
Borden & Lovell, 70 West, N. Y. 4
Pardee A. & Co., 111 Broadway, N. Y. 40

Cocks, Steam, Gas, &c.

Enterprise Mfg. Co., Philadelphia, Pa....42
Lane Bros. Poughkeepsie, N. Y.42

1. The first part of the document is a title page. It contains the title of the report, the author's name, and the date of the report. The title is "The Effect of the New Tax Law on the Income Tax of the United States". The author is "John D. Smith". The date is "January 1, 1954".

Special Notices.

HAYDOCK & BISSELL,
Wholesale Auctioneers

By order of the Central Mfg. Co., of Boston.
Large Special and Peremptory Sale

3400 CASES of TACKS and NAILS
ON TUESDAY AND WEDNESDAY, MAY 18th and 19th,
AT 10 O'CLOCK A. M.,
At Our New Salesroom

12 Murray & 15 Park Place, N. Y.

This sale will be made on 60 days' time for approved paper for bills of \$50 and over under \$500 net cash. The above is the property of the Central Mfg. Co., of Boston (Manufacturers of Tacks, Brads and Nails) which is closing out its business. The goods to be sold comprises the stock of five factories—4, e., about 1100 cases of the Florence Mills Co., 2 cases Anthony & Co., 2 cases Tack Co., 545 Cases W. W. Cronin & Co., 500 cases Bay State Tack Co., 300 cases Sparta Tack Co. This will be the Largest Auction Sale of Tacks and Nails ever made, including a complete assortment of all kinds of Tacks, Finishing Nails, Brads, Upholsterers' and Shoe Finding Goods, etc., etc. The entire stock will be on hand, as they may be ordered, during the fiscal year beginning July 1, 1886, and ending June 30, 1887.

PROPOSALS FOR PLYER PUNCHES FOR POSTAL NOTES.

POST OFFICE DEPARTMENT, (WASHINGTON, D. C., April 19, 1886.)
SEALED PROPOSALS will be received at this Department until Saturday, the 22nd day of May, 1886, at 12 o'clock noon, for furnishing plyer punches for use in the issue and payment of Postal Notes, in such numbers and at such times, and from time to time, as they may be ordered, during the fiscal year beginning July 1, 1886, and ending June 30, 1887.

The Postmaster General prescribes no model or sample for bidders, but choice among samples submitted will be made with reference to utility and price.

Blanks for proposals, with specifications giving full information and instructions, may be had on application to the Superintendent of the Money Order System, Post Office Department, Washington, D. C.

The Postmaster General reserves the right to reject any or all bids, and to waive technical defects.

A decision on the bids will be made on or before the 31st day of May, 1886.

WILLIAM F. VILAS, Postmaster General.

For Sale.

A complete and well-equipped MACHINE FILE FACTORY and in perfect running order, situated in a Southern City, with a capacity of about 1000 dozen files weekly, and capable of being largely increased at small outlay. The brand is well and favorably known South, West and Southwest, besides having a good local consuming demand. The machinery is comparatively new, the Engine and Boiler 120 H. P. and new, included with the works are complete Machine and Blacksmith Shops for repairs, etc., together with a large assortment of Dies, Patterns, Files, finished and unfinished Steel in Bar and Sheared Blanks and various other supplies, etc. This is an opportunity seldom offered, and to a practical file manufacturer an opening to a successful business is certain; besides other advantages, exemption from tax, Municipal and State, on all plants. Terms liberal, and will be arranged to suit purchaser. All further information can be obtained by addressing

"K. K. & W.,
Office of The Iron Age, 66 and 68 Duane St., N. Y.

Extension Lamp Patent.

No. 332,695. December 22, 1885.
Broad Claims. NEW DEPARTMENT IN THIS LINE OF MANUFACTURE. Fixture can be made very cheaply, and avoids some serious objections to all now in use. Price \$1000 Cash, or \$500, with moderate royalty, if purchaser will put on the market promptly. Copy of specification and drawings supplied free. English and Canadian patent rights on above invention for sale also. Address WM. H. BABCOCK,
Box 225, Washington, D. C.

Wanted.

A Salesman for Pig Iron. One familiar with New York City and Eastern Trade preferred.
Address "A. L. R.,
Office of The Iron Age, 66 and 68 Duane St., N. Y.

WANTED—By July 1st, a situation as Traveling Salesman, by a young man having four years' experience in Retail and 12 years as Traveling Salesman to the Hardware trade; extensively acquainted with Jobbers of Hardware west of Cleveland through out the Northern States. Prefer to represent Manufacturer direct to Jobbers. Address
"EXTENSIVE," P. O. Box 238, Marysville, Ohio.

BUSINESS MANAGER.—The advertiser, aged 30, now occupying position of trust with a large manufacturing concern, desires a change of location on account of health of his family. He is a first-class bookkeeper and general business man. Good references and security bonds if desired. Address A. D. C. Office of The Iron Age, 66 and 68 Duane St., New York.

WANTED.—Corresponding Clerk: must be a good accountant and have a thorough knowledge of Hardware. Address, stating age, experience, salary, etc.,
BINDLEY HARDWARE CO.,
Pittsburgh, Pa.

For Sale, Machinery & Supplies.

About 125 Magic Screw Plates, new and first-class, at less than cost to make; included are screw Plates cutting bolts 1/4 in. to 1 in., also from 1/4 in. to 1 in. with Plug Taps and Pipe Cutting-off and Threading Stocks, several sizes from 1/4 in. to 4 in. size. \$2000 worth extra quality bolts, 100 lbs. 1/2 in. and 3/4 in. square and Hexagon Nuts, 1/2 to 4 in. per lb. Lathe, Planers, Drill Presses and Machinery. Prices low. Address
YORK & BENTON, Cleveland, O.

TO FOUNDRYMEN.—A practical Iron Moulder capable of taking charge; is well up in all classes of work; desires to correspond with parties wanting a first-class man. Country preferred. Address
"PRACTICAL,"
Office of The Iron Age, 66 and 68 Duane Street, N. Y.

Special Notices.

SPECIAL NOTICE
TO MANUFACTURERS.
THE CALUMET & CHICAGO
CANAL & DOCK CO.,

The largest land owners at SOUTH CHICAGO and in the Calumet Region, offer on liberal terms

SITES FOR FACTORIES,

Lots of acre property on river and railroad, connecting with the B. & O., Chicago & Atlantic, Chicago & E. Illinois, Chicago, R. I. & P., Chicago & W. Indiana, and Belt Line, Ill. Cent., L. S. & Mich. So., L. N. Albany & Chicago, Mich. Cent., N. Y., Chicago & St. Louis and P., Ft. W. & Chicago Railroads.

Number of passenger trains to and from Chicago to South Chicago daily is about 75 each way.

Also Docks on Calumet River, with its splendid harbor at South Chicago, and the only river property connecting with the Belt Line, which also connects with every R. I. entering Chicago.

TOWAGE ONE-HALF CHICAGO RAILROADS.

Capital invested at this point alone, \$9,000,000.00
In buildings and plants, 4,100,000.00
Value of product last year, 9,000,000.00
Lumber received last year, 165,000,000 Ft.

Among the many large establishments already located are the North Chicago Rolling Mill Co.'s Bessemer Steel Rail Mill, the Calumet Iron and Steel Co.'s Rolling Mill and Nail Manufactory, The Morton Frog and Crossing Works, Chicago Forge and Bolt Works, etc., etc.

MANUFACTURERS, or shippers of COAL, PIG IRON, IRON ORE, LUMBER, ETC., also parties who wish to build GRAIN ELEVATORS will please correspond with us.

Contractors for River and Harbor Improvements, Dredging Dock and Pier Construction, Pile Foundations, etc. Estimates on application.
Office, 120 Dearborn Street, Chicago.

DISSOLUTION.

FRANKFORD, PHILADELPHIA, U. S. A.,
April 1st, 1886.

The co-partnership heretofore existing between the undersigned, under the firm name of Yerkes & Plumb, is dissolved this day by mutual consent.

The business will be conducted by Fayette R. Plumb, under the old firm name, he having purchased all the right, title and interest of Jonathan Yerkes, the retiring partner. He assumes all liabilities and becomes the sole owner of all the assets of the late firm.

JONATHAN YERKES,
FAYETTE R. PLUMB.

In retiring from a business in which I have taken an active interest for thirty years, I desire to avail myself of this opportunity to extend my warmest thanks to my old friends and customers, who have stood by me so faithfully during the last quarter of a century, and I heartily commend them to my former partner, with whom I have been so pleasantly associated for the past seven years.

JONATHAN YERKES.

ALEXANDER YOUNG,
FARMERS, Pa.

For Sale.

Full set of PATTERNS and CORE BOXES complete, for STEAM and GAS PIPE FITTINGS. Also Tools and Machinery. All in good order. Standard size. Address
JOHN B. MORRIS, Eagle Foundry,
Box 27, Cincinnati, O.

BARGAINS IN MACHINERY.

One 32 x 54 Corlies Engine.
One 20 x 38 " "
Six Horizontal Tubular Boilers, 50 Horse-Power.
Six No. 8 Knowles Pumps.
Six No. 7 Blake " "
Six Iron Planers, 26 x 26 x 9 feet.
Six " " 24 x 24 x 6 feet.
Six " " 24 x 24 x 6 feet.
D. B. CRUICKSHANK,
24 Dyer Street, Providence, R. I.

FOR SALE.

Two Pneumatic Hoists, Taws & Hartman patent in perfect order. Removed because too small. Each composed of 8 sections, 10 feet 3/4 inches long, 16 inches inside diameter, with Bed Plates, Shafts, Pistons and Cages complete. The cages have double platforms, each 4 feet by 6 1/2 feet, to hoist two barrows at once. Apply to

ROCKHILL IRON AND COAL CO.,
320 Walnut St., Philadelphia.

FOR RENT, SALE OR LEASE.

Foundry 7500 ft. floor space, Machine Shop 60 x 43 ft., and Pattern Shop 60 x 43 ft., located in the best jobbing part of St. Louis, with good reputation and trade established. The works have been running and making money since 1880. All in first-class order and running off heats every day. Satisfactory reasons for leasing or selling cheap will be given to any one meaning business.

Address
Care Hooker & Corville, St. P. Co.,
St. Louis, Mo.

WANTED.

For Chicago and the West, Agencies Hardware Specialties. Nothing but first-class propositions entertained. Address
"BUSINESS,"
Office of The Iron Age, 38 Clark St., Chicago, Ill.

WANTED.—By a young man of experience, a situation in a manufacturing business; is competent to take charge as Superintendent. Address
"G. H. C.,"
Office of The Iron Age, 230 South 4th St., Philadelphia.

Special Notices.

ENGINES & BOILERS.
NEW AND SECOND-HAND.

The following new Slide Valve Engines guaranteed complete and first class:
One 18 x 24. One 10 x 12.
One 10 x 24. One 8 x 12.
One 12 x 16. One 8 x 10.
One 10 x 16. One 7 x 9.
Also One 12 x 30 Corlies Engine. New.
One 14 x 20 Adjustable Cut-Off Engine. New.
Also the following, Second-hand, guaranteed in good condition:
One Corlies Cut-Off, 18 x 42.
One " " 14 x 42.
Two Wright " 22 x 42.
One " 18 x 32.
One Vertical Safety Power, 14 x 16.
One " 8 1/2 x 7.
One Corlies Beam Condensing Engine, 500 H. P.
One 10 x 48 Adjustable Cut-Off.
One 10 x 30 " "
One 10 x 20 " "
One 10 x 24 Plain Slide Valve.
Two 9 x 21 " "
One 10 x 15 " "
Large stock assorted sizes new and latest improved Engines and Boilers. Plans, estimates and specifications furnished for Mills and Factories. Send for Circulars and Catalogues.

THE NEWELL UNIVERSAL MILL CO.,
10 Barclay Street, New York.

Rolling Mill Machinery.

Shears for cutting old Rails, with engine attached.
Small Shears for cutting finished Iron, with Engine attached.
Machine for cutting and punching Fish Plates hot.
One 16-in. Traip, Housings and Rolls.
One 9-in. " "
One Knowles Pump.
One Cammell & Mortimer Pump.
Two Steam Pumps.
One No. 3 Gould & Garrison's Pump.
One 32-in. x 32 in. Vertical Condensing Steam Engine.
One Blower.
One Engine for running Blower.
Six Boilers with Columns and other Castings for same.
Lathes for Turning Rolls.
Furnace Castings, Tools, Guides for Rolls, Pulleys, etc.
For sale together or separately.

DAN'L W. RICHARDS & CO.,
23 Mangin St.

Notice to the Trade.

The tensile strength of my Chains will be as follows hereafter:

MORTON'S METAL CHAMPION CHAINS.
No. 110.....1250 lbs. No. 1 extra heavy, 650 lbs.
No. 10.....800 lbs. No. 2 extra heavy, 450 lbs.
No. 9.....600 lbs. No. 3 Regular.....550 lbs.
No. 8.....450 lbs. No. 4 Regular.....380 lbs.

No. 6, 3000 lbs. No. 5, 2200 lbs. No. 4, 1750 lbs.
The No. 30 Cable Chain will outwear the Champion or any similar chain as two to one, and will guarantee for 10 years. Send for special price for quantities on this size chain.

We, the undersigned, on January 22, 1886, tested the different makes of Chains and found the Chains manufactured by Thomas Morton to be the strongest of all tested.

A. G. ROBERT & BRO., Builders,
112 Bank St., New York City.
JACKSON & COWENOVES, Hardware,
450 Fulton St., Brooklyn.
GWYNNE & RICHARDSON, Hardware,
589 Hudson St., New York.

The average tensile strength of my Champion Chains over others of a similar make was 10 per cent, and my Chains are less liable to kink and are better finished and less in price. My Cable Chains are 20 per cent stronger, cheaper and better finished than the imported or any other riveted Chain in the market of the same weight.

THOMAS MORTON, 65 Elizabeth St., New York City.

A New Pulley Lathe.

The best Machine ever designed for turning Pulleys.
It will finish from 16 to 60 inches in diameter by 24 inches face.
Price over one-third less than any other Machine for Pulley turning of like grade of work.

THE NEWARK MACHINE TOOL WORKS,
Newark, N. J.

CASH BIDS WANTED

FOR CONSTRUCTION OF AN
Iron Blast Furnace
(100 tons daily capacity)
at Sheffield, Ala.

Construction to begin not later than July 1, 1886. Bids with Plans and Specifications, make be submitted by May 15, 1886. Before preparing Plans, bidders are requested to examine the Furnace site, which is on the north bank of the Tennessee River, adjacent to the Sheffield Landing. The Company reserves the right to reject any and all bids, etc.
Address
SHEFFIELD FURNACE CO.,
Sheffield, Colbert Co., Ala.

A WELL-KNOWN Manufacturing firm about opening a permanent office in London, England, will accept the sole agency for Great Britain and Europe for American specialties of all kinds, and will also act as purchasing agents for American firms in the above-named markets.

Address
"VAN A.,"
Office of The Iron Age, 66 and 68 Duane St., N. Y.

THE LEXINGTON (VA.) MANUFACTURING CO.,

wish to lease for a term of years their FOUNDRY, BOILER and MACHINE SHOPS, fronting 200 feet on side tracks of the Baltimore & Ohio and Richmond & Allegheny Railroads, at Lexington, Virginia. These shops are thoroughly equipped, with ample (water) power applied, and ready for occupancy and use without the expenditure of a dollar. It is a fine opportunity for capitalists who wish to engage in any character of Iron manufacture in the center of Iron region of the James River Valley of Virginia.

Address THE LEXINGTON MFG. CO.,
Lexington, Va.

SITUATION WANTED

By a practical Superintendent or Screwman in Plate, Iron or Steel; also expert Roll Turner.
Address
BOX 37,
Coatesville, Pa.

Special Notices.

Second-hand Machinery in Good Order. For Sale Cheap
1 Engine Lathe, 48 in. x 20 ft. bed.
" " 28 in. x 15 ft. " "
" " 24 in. x 20 in. and 24 ft. each 24 in. x 12 ft. bed. Field
" " 22 in. x 12 ft. " "
" " 20 in. x 8 and 10 ft. bed. Putnam.
" " 17 in. x 8 ft. bed. H. P.
" " 15 in. x 6 ft. order. Rod feed only.
" " 14 in. x 6 ft. Ch. lea.
" " 12 in. x 5 ft. " "
2 Engine Lathes, 13 in. x 5 ft. Wm. Sellers & Co. Planer.
" " 17 in. x 17 in. x 3 1/2 ft.
" " 20 in. x 20 in. x 4 and 5 ft.
" " 30 in. x 30 in. x 7 ft.
" " 30 in. x 30 in. x 8 ft.
" " 24 in. x 24 in. x 5 and 6 ft.
" " each 42 in. x 42 in. and 4 and 10 ft. Shaper, 10 in. stroke. Pratt & Whitney.
" " 12 in. B. G. & S. F. Drill.
" " each Upright Drill, 20 and 24 in., with Back Gears.
" " Lincoln Pat. No. 2 Miller.
" " Index Miller, Pond.
" " each 3 Spindles, No. 8 Drills. P. & W. Co.
" " each No. 1 and 2 Screw Machines. Wire Feed. Pratt & Whitney.
" " No. 3 Screw Machine. Plain. P. & W.
" " 25-lb. Drop Hammer. Beecher & Peck.
" " each 40 and 50 lb. Trip Hammers.
" " No. 3 Stiles Presses.
" " 10 Foot Presses, assorted.
" " 8 Power.
" " 12 Punching and Shearing Machines, assorted.
" " Return Tubular Boilers, 25 H. P.
" " Vertical " 40 H. P.
" " Boiler, 25 H. P.
" " Horizontal Engines, 8 and 10 H. P.
" " No. 2 Hand Milling. Pratt & Whitney.
" " Horizontal Engine, each 25 and 45 H. P.
" " Vertical Engine, 10 H. P.
" " The Sinking Machine.
" " 14-in Boring and Turning Mill, Pond.
" " 40-lb. Bradley Hammer.
" " 12-in. Shovel. Betts.
" " No. 2 Root Blower.
" " No. 2 Cutting-Off Machine. Pratt & Whitney.
" " Suspension of 1000 lb. Steam Hammers. Morgan & Williams.
" " Roger's Wood Planer, 24 in. x 4 in.
" " Also full line of New Machinery.
" " New York Agency TAYLOR MFG. CO., Engines, Boilers, etc. Correspondence solicited.
" " FURNITURE TOOL AND SUPPLY CO.,
P. O. Box 3362, No. 41 Deit St., New York City.

SECOND HAND,

CHEAP.
One 17 ft. bed, 30 in. Engine Lathe.
One 16 ft. " 25 in. " "
One No. 6 Sturtevant Pressure Blower.
One Profiling Machine.
One No. 3 Brown & Sharpe Screw Machine.
One 2-Spindle Pratt & Whitney Drill.
One 4 " " "
One 4 " " "
One Pittsburgh Milling Machine. Lincoln Pattern.
One Newton Milling Machine with boring head.
Send for List of Second-hand Tools.

New York Machinery Depot,

Bridge Store No. 16, on Frankfort St.
NEW YORK.

For Sale.

A good, clean stock of Hardware, Stoves, and Tinware; will invoice about \$5000; annual sales \$20,000; located in brick building, 22 x 80, two stories high; rents for \$500 per year; built for Hardware store; the only full stock in city; very light competition. The business is fully established. I have been in business nine years.

SIDNEY WOOD,
Chillicothe, Ill.

For Sale.

One of the best located Hardware Stands in the Anthracite Coal Region of Central Pennsylvania. Stock consisting of Hardware, Iron and Steel, Stoves and Tinware, Glass, Paints and Oil; will invoice \$15,000 to \$17,000. Stand 35 years old in a town of 6000 inhabitants and splendid country trade. Must sell. Reason, ill-health.

Address
"ANTHRACITE,"
Office of The Iron Age, 66 and 68 Duane Street, N. Y.

FOR SALE.

Stock of Hardware, etc.; Tin Shop, Tools, etc. Fine store. Bargain. Address
E. WONDERS,
659 Fourth Street, Detroit, Mich.

A GENTLEMAN aged 45, an expert Accountant and Office Manager, having a valuable knowledge of Machinery and of Mechanical and Manufacturing processes acquired during 20 years connection with manufacturing and constructing concerns, wishes a position of responsibility where his experience will be available. References covering 20 years my record.

Address
"D. J." Box 111,
Office of The Iron Age, 66 and 68 Duane St., N. Y.

Wanted.

Superintending Mechanical Engineer to take charge of the Canadian Locomotive and Engine Co.'s Works, at Kingston, Ontario, Canada. Must be competent to undertake the construction of Locomotive, Stationary, Marine, Pumping and Hoisting Engines, etc., etc. in fact all the work of a general engineering establishment. Apply, stating age, experience, references and salary wanted to
W. M. HARTY, Managing Director.

Chicago Agency Wanted.

I shall move into my new four-story building, 168 Lake St., on May 1st, and having ample accommodation and men on the road, I am open to receive the agency of some line of goods not conflicting with my own.

A. J. McDONALD, Manfr. of Iron Pumps, Brass Goods, Steam Fittings, etc.
259 Lake St., Chicago, Ill.

WANTED.

Manufacturers or Jobbers of Hardware, Tinware or Wood and Willow Ware, who have any lots of goods to close out cheap for cash—will do well to address in confidence,
"HARDWARE,"
care Carrier No. 75, Post Office,
Baltimore, Md.

THE SUBSCRIBER, having a valuable Kaolin

Pit on Staten Island, is desirous of selling its production to any party or parties who can control sales. Address
"KAOLIN,"
Office of The Iron Age, 66 and 68 Duane St., N. Y.

WANTED.

An Experienced Hardware man wants a position in a Wholesale or Retail Philadelphia House. Speaks German and English. Best of references. Address
RICHARDS,
1814 Marine Street, Philadelphia.

Special Notices.

MACHINERY, SECOND-HAND, AT ORDER
Brown & Sharpe Universal Miller.
Pratt & Whitney No. 2 Miller. Lincoln Pattern.
Garvin No. 3 Milling Machine.
Brainerd No. 4 Miller.
Pond Index Miller.
Pratt & Whitney Marking Machine.
" " Screw Machine No. 3. B'k Gear.
Engine Lathe, 15 in. x 6 ft.
Engine Lathe, 17 in. x 6 1/2 ft. No screw.
Rod feed only.
Lathe & Morse Engine Lathe, 15 in. x 6 ft.
Pitchburg " 15 in. x 6 ft.
Pond Engine Lathe, 16 in. x 7 ft. Complete
Harrington " 16 in. x 6 ft. " "
Bridgeport " 16 in. x 8 ft. " "
New Haven " 18 in. x 8 1/2 ft. " "
Ames " 20 in. x 8 ft. " "
Perkins " 26 in. x 10 ft. " "
Engine Lathe, 24 in. x 10 ft. Lathe.
20 in. x 6 ft. Planer, Pratt & Whitney.
20 in. x 6 ft. " " " "
20 in. x 4 ft. " " " "
20 in. x 6 ft. " " " "
32 in. x 2 ft. " " " "
Nos 2 and 4 Stiles Presses.
No. 3 1/2 " " "
No. 4 Long & Alstatter Punch.
No. 5 Wilder Punch.
100-lb. Bradley Hammer.
200 lb. Steam " Machine Tool Works, Phila.
50-in. Vertical Boring and Turning Mill. Phila.
28-in. " " " " " Niles.

Bolt Cutters, Milling Machines, Drills, Shapers, Lathes, Planers, etc., new, and also a line of second-hand machines not mentioned above.

State what you want to buy, and we will be glad to correspond with you.
Call and see us.

E. P. BULLARD,
14 Dey Street, New York.

SCRAP IRON.

We buy all kinds of Iron and Steel Scrap, Burnt Iron, Old Rails, etc., etc. Write us, naming quantity, price, etc.
ROBINSON & ORR,
115 Water St., Pittsburgh, Pa.
(ESTABLISHED 1850.)

SCRAP IRON.

We buy and sell all descriptions of Iron and Steel Scrap. Correspondence solicited.
HOFFMAN, PARRY & CO.,
28 S. Fourth St., Philadelphia.

IRON AND STEEL SCRAP

Bought and Sold.
JAMES H. LOGAN,
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We buy all classes of Iron and Steel Scrap. Wrought Turnings, Cast Borings, Burnt Metal, etc.
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Cotton Gin Ribs.

HARDWARE MERCHANTS
and others furnished with materials of all kinds for making and repairing COTTON GINS, RIBS and SAWS for repairing ALL makes of gins. Send for Price List. Address THE BROWN COTTON GIN CO., Manufacturers of Cotton Gins, Feeders and Condensers, New London, Conn.

For Sale.

Our stock of Hardware, Stoves and Tinware in Alton, Osborne County, Kansas. Stock is choice, clean goods. Center of business location. Two-story stone building, leased for three to five years. Building can be bought cheap or will be re-leased. Trade good; location the best in the county. Can give satisfactory reasons for wanting to sell. Address
KNOX & EARLS, Alton, Osborne County, Kan.

Vulcan Works, Baltimore, Md.

This old-established Foundry and Machine Shop for sale or lease. Has a complete equipment in all departments. Tools for sale. Send for catalogue. Address as above.

For Sale.

One 600-pound Steam Hammer.
Two Lewis, Oliver & Phillips' Bolt Headers.
All nearly new, and in first-class condition.
Address
AJAX FORGE CO.,
Chicago.

FOR SALE.

100-lb. Bradley Hammer; latest pattern; in perfect running order; complete with Dies, Foundation Timber, etc.
THE BRIDGEPORT FORGE CO.,
Bridgeport, Conn.

FOR SALE.

PLANT FOR STEEL AND IRON FORGINGS
Steam Hammer, Engine, Boiler, etc.
ROOT BLOWERS, Nos. 1, 2, 4, 5 and 7.
STURTEVANT BLOWERS, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10. Engines, Boilers, Pumps, Tanks, Rolls, and General Machinery. Careful attention given to purchasing for parties out of the city. Correspondence solicited. C. R. BIGELOW, M. E.,
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Specialties in Cutlery.

Having unexcelled facilities for manufacturing novelties in Cutlery, Shears, Edge Tools, etc., we solicit correspondence with inventors or any who desire to have these articles manufactured and pushed.
EMPIRE KNIFE CO.,
West Winsted, Conn.

HARDWARE TRAVELERS in United States and

Canada may hear of a commission to sell the Patent New York Hasp Lock and Catch combined.
NEW YORK HASP LOCK WORKS,
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Special Notices.

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Two Engine Lathes, 87 in. swing, 20 ft. 6 in. bed, Geared in Face Plate, Screw Feed, Compound Rest.
 One Engine Lathe, 15 in. x 6 ft.
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 One Sellers Iron Planing Machine, 30 x 30 x 12 ft.
 One Iron Planer, planes 24 ft. long, 62 in. x 62 in. Excellent condition.
 One Iron Planer, planes 8 ft. long, 30 in. x 30 in.
 Two Iron Planers, plane 6 ft. long, 24 in. wide.
 Three Iron Planers, plane 4 ft. long, 24 in. x 24 in.
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 One Oliver Bros. & Phillips' Bolt Header
 One Four-Spindle Nut Tapper
 One 175-lb. Bement Steam Hammer. Excellent.
 One Small Steam Hammer.
 One Hydraulic Wheel Press.
 One 40-inch B. G. S. F. Upright Drill. N. Y. Steam Engine Co.'s make.
 One 26-inch B. G. S. F. Upright Drill.
 Two Slotting Machines, 6-in. stroke. Bement's make.
 One Profiling Machine.
 One Axle Lathe, for car axles.
 One Durrell 7 Spindle Nut Tapper.
 Send for lists New and Second-hand Tools, too long for publication.
 Sole Agents EDISON SHAFING MFG. CO.
 The GEO. PLACE MACHINERY CO.,
 121 Chambers and 108 Reed Streets,
 NEW YORK.

SECOND-HAND MACHINERY
IN GOOD ORDER.

One 20 x 48 Corlies Engine.
 One 18 x 36 Hor. Engine, built by Jacob Navier.
 One 14 x 16 Vertical Engine, New York Safety Steam Power Co.
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 One 12 x 20 Corlies Engine.
 One 12 x 15, Supplee Engine Co.
 One 8 x 16 Porter Engine.
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 One 6 " Baxter Engine.
 One 30 " Vertical Tubular Boiler.
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 One 16 x 6 Hartford Engine Lathe.
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 One 16 x 6 Hartford Engine Lathe.
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 One 36-inch swing Column Drill. New Haven.
 One 30-inch Vertical Boring Mill.
 Also complete outfit for a Saw and Door Factory, including Planers, Moulding Machines, Band Saws, Tenoning Machines, Upright Moulding Machines, Scroll Saws, Mortiser Saw Benches, &c., all modern Tools, but little used.

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135 North 3d Street, Philadelphia, Pa.

E's and B's.

The largest and most reliable stock of Engines and Boilers in America. All sizes and styles, and all made of the very best material at lower prices than common, cheap country-made work can be sold. These Engines are all made interchangeable by special machinery. Agents wanted, and orders from the Trade solicited.

Write for Illustrated Catalogue and particulars.

H. M. SCIPLE,

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FOR SALE.

Large lot second-hand Iron Tanks, from 5000 gals. down; all sizes and shapes.
 About 625 ft. 4-in. Wrought-Iron Tubes with threads cut in them; good as new.
 Lot new 100 gal. Oil Tanks with pumps; all complete.
 Lot second-hand Engines and Boilers.
 Lot new Mule and Horse Shoes, Wrought and Cast Scrap, Red and Yellow Brass.
 BUSSINIUS, CUNIFFE & CO.
 Dealers in Scrap Iron and Old Metals.
 12th and Washington ave., Philadelphia.

Iron Ore Bed For Sale.

Situated at Sharon Station, N. Y., & Harlem Railroad, an old, well-known bed of excellent hematite ore in unlimited quantity. Sale under foreclosure, to be at Poughkeepsie, N. Y., at 12 m. May 11th, 1886. Circular with other particulars will be sent if desired.
 S. TURCK, Trustee,
 P. O. Box 23, New York City.

FOR SALE.

An Oil Separator, made by C. F. Roper & Co., Boston, suitable for separating oil from drillings, cuttings from bolts, screws, &c. It will save enough oil to pay for the machine in a short time.
 THE E. D. CLAPP MFG. CO.,
 Auburn, N. Y.

HOISTING ENGINES.

New 10 H.P. worm-gear Hoisting Engines: Steam Cylinder 6 in. bore, 8 in. stroke; geared 16 to 1; Drum 20 in. diameter, 18 in. long. Improved Cone Friction for Hoisting and Lowering. Also 6 in. x 6 in. Williamson Spur-Gear Hoister, with Clutch and Link Motion. Drum 8 in. x 16 in.
 A. G. BROOKS,
 261 N. Third Street, Phila.

For Sale.

Rails, Engine, Cars; 100 tons Rails, 25, 30 and 40 lb.; 50 tons Steel Rails, 25, 30 and 40 lb. shape, with Fish Plates and Bolts, complete. Engine, 7 x 16 cylinder, 4 drivers 36 in. diam., guage 4 ft. 8 1/2 in.; Tender, 4 wheels; Flat Cars, 8 cars, 4 wheels, decks 8 x 14 ft.
 Address "W. S."
 626 Broadway, Cleveland, Ohio

WANTED

To exchange good Chicago Real Estate and Cash, for good, clean stock of Hardware or Agricultural Implements. Don't reply unless you mean business and have a bargain to offer. State full particulars as to value of stock, amount of business done and lowest price; will also purchase accounts Receivable at fair value. Correspondence strictly confidential. Address
 "HARDWARE" Box 43,
 Office of The Iron Age, 38 Clark St., Chicago, Ill.

NOTICE.

Large Buyers of Shafting are requested to send specification for special prices.
 MERWIN MCKAIG,
 Cumberland, Md.

Special Notices.

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LARGE SIZE, 500 Pages, 6 x 9 1/2 in.
 Full Leather, each, \$8.00.
 POCKET SIZE, 250 Pages, 4 x 7 in.,
 Full Leather, each, \$4.00.

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Alphabetical Arrangement.
INDEXED THROUGH.

Bills can be priced and quotations noted in one-quarter of time required by old classification.

Send for Circulars.

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METALLURGICAL ENGINEERING.

I am prepared to furnish

PLANS, SPECIFICATIONS and ESTIMATES

AND TO
 SUPERINTEND THE CONSTRUCTION OF ROLLING MILLS AND MACHINERY, REGENERATIVE GAS FURNACES, TUBE AND PIPE MILLS, ETC., ETC.

I represent the latest improvements in all the above branches.

M. V. SMITH, Metallurgical Engineer,
 Rooms 16, 17, and 18 Bissell Block, Pittsburgh, Pa.

BLACK RIVER FALLS,
WISCONSIN

Offers splendid opportunities to parties with capital wishing to engage in manufacturing. Excellent water-power. Plenty of hard and soft timber. Rich Iron Mines recently opened. The largest charcoal Iron Furnace in the United States just completed.

Extensive Granite Beds now being developed.
 Write to secretary Board of Trade for full information.

For Sale.

Fayetteville Foundry and Agricultural Works, consisting of Machine Shop, 30 x 60; Foundry, 50 x 60; Fire-proof Pattern Building, 25 x 30; 3 stories; Blacksmith Shop; all other buildings for the convenience of the Works; Machinery for Wood and Iron. A large assortment of valuable Patterns. These works have a first-class jobbing trade all the time. Convenient to ship by four Railroads and Canal. With this, several very valuable Patents on goods being manufactured here. Also a good Agricultural Implement trade, wholesale and retail. Water-Power most of the year; Steam-Power when needed. Any one that has any specialties to manufacture would find this valuable property to buy. Sold cheap. Terms easy. Correspondence solicited. HUNTINGTON BOARD, Fayetteville, N. Y.

For Sale, Manufacturing Sites on the
PITTSBURGH NATURAL GAS BELT,
 250 acres of land on A. V. R. R., one-fourth of a mile beyond Pittsburgh city line. Natural gas has been located on this land by Philadelphia (Westinghouse) Co. A 9 and a 12 foot vein of coal on property. Three-fourths mile of river front. For particulars, address JAS. BOYD, Box 35, Allegheny, Pa., or W. A. HERRON & SONS, No. 30 Fourth Avenue, Pittsburgh, Pa.

FOR SALE.—The property known as the stirring Chas. Works, situated on the north side of Amsterdam Street, Black Rock, Buffalo, N. Y., No. 250, within two minutes' walk of the Belt Line Railroad Station. The works are in perfect order for immediate operation, and possess all the machinery requisite for the manufacture of Chain from 1/4 inch up to 2 1/2 inches. Facilities for receiving and shipping are admirable. For further particulars apply to
 Messrs. JOHN OTTO & SON,
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FOR SALE.

A nearly new four-ton Steam Hammer, in first-class condition. Made by the Morgan & Williams Engineering Co., of Alliance, Ohio. Very best manufacture. Address
 WORCESTER STEEL WORKS,
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Wanted to Buy.

Old Iron and Steel Wire Rope, Burnt Iron, &c.
 Address, stating price, quantity, &c.
 SITES, GILL & CO.,
 222 and 224 So. Third Street,
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TO CAPITALISTS AND MANUFACTURERS.

A rare opportunity to invest about \$50,000 in an established Manufacturing Business where where cultural and other implements are made. Located in an extensive Agricultural district in a growing town of California. The business has been running three years; has an eligible site. Land adjoins depot grounds of a prosperous Railroad. Address "CALIFORNIA"
 Office of The Iron Age, 66 and 68 Duane St., N. Y.

WANTED.

AN ALLIGATOR SQUEEZER,
 second-hand, large enough to squeeze 200-lb. Scrap Ball; to run by belt, and to have tight and loose pulley. Address, stating lowest price,
 "NAIL MILL,"
 Office of The Iron Age, 66 and 68 Duane St., N. Y.

Wanted.

A good Agent in every city to sell the Alaska Patented Dry Air Refrigerator. Address, for Circular and terms, the manufacturers,
 THOS. H. MARKS,
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TO LET, WITH POWER, one or more floors of a two story and basement brick building, 125 x 55 feet situated within seven minutes of freight depot and steamboat wharf.
 Address "P. O. BOX 5," Bridgeport, Conn.

Special Notices.

Corning & Co.'s

OLD ESTABLISHED

HARDWARE AND IRON

Business in Albany

FOR SALE.

I am prepared to negotiate with any party wishing to engage in the IRON, STEEL and HARDWARE TRADE for the sale of the Merchandise and Good-Will of the Late Partnership of CORNING & CO., of Albany, N. Y. I know of no place offering superior inducements to any one having a reasonable amount of capital than the City of Albany for the conduct of this business.

SELDEN E. MARVIN, Receiver,
 451 Broadway, Albany, N. Y.
 APRIL 10th, 1886.

To Manufacturers of

NOVELTIES and SPECIALTIES

—IN—

HARDWARE.

The advertisers desire to correspond with manufacturers of novelties and specialties in Hardware with a view of representing same to the trade in and about New York. Have a large acquaintance with the trade, having been in active business for a number of years. Can furnish first-class gilt-edge references as to ability and character. Manufacturers desiring to be represented will do well to address
 C. & B.,
 Office of The Iron Age, 66 and 68 Duane St., N. Y.

FOR SALE.

NAIL FACTORY.

The "King Factory" (so-called), situated in the westerly part of
RAYNHAM, MASS.,
 near the works of LEEDS, ROBINSON & CO. The property consists of about one acre of land with buildings thereon, water privilege, Steam Engine and Boiler, 14 Reed Nail Machines, Shafting, Pulleys and such fixtures, Tools and Implements as are used in a Nail or Tack Factory.

For further information apply to
THOMAS J. LOTHROP, Treasurer,
 Taunton Tack Co., Taunton, Mass.,
 OR TO
JOHN H. PARKS, Treasurer,
 Central Mfg. Co., 70 Kilby St., Boston.

NOTICE TO THE TRADE

The Hardware and House-Furnishing Goods Trade are hereby cautioned against an Ice Chisel and Pick called the Varney Ice Pick, and made and sold by parties in Massachusetts. This pick is a direct and glaring infringement on our Lightning Ice Chisel, patented March 31, 1885. We have taken prompt and decided action to protect our rights, and our customers will do us a favor by reporting to us any houses buying or selling this infringement, as such parties are as liable in so doing as the makers. Yours truly,
 ROGERS NOVELTY MFG. CO.,
 Cohoes, N. Y.

A Rare Opportunity.

An old-established Retail Hardware, Stove and Tinshop in a good town in Central Ohio. Stock about \$4000. A good chance for any one. Good reasons for selling.

Address "TELEGONIA,"
 Office of The Iron Age, 66 and 68 Duane St., N. Y.

FOR SALE.

2500 lbs. 9 in. x 3-16 in. Best Norway Iron. Will sell low. Lot left after finishing a contract. Bars about 4 to 5 feet long.
 BEECHER & PECK,
 New Haven, Conn.

For Sale,

ROLLING MILL.

The Puddle and Plate Mill known as the Stony Creek Rolling Mill, at Norristown, Pa., will be sold low on easy terms. For further information, inquire of JAS. S. SWARTZ, 224 S. 4th St., Phila., or HENRY FREEDLY, Norristown, Pa.

A GOOD BUSINESS MAN, experienced Mill Manager, capable and successful in handling men, with thorough knowledge of Machinery, &c., wants situation; reference and security.
 Address P. O. BOX 124,
 Camden, N. J.

TO EXCHANGE for a good, clean, well-assorted stock of Hardware, a finely improved Stock Farm of 300 acres near Sedalia, Missouri; well stocked with cattle, sheep, &c. For particulars, apply to
 J. M. OFFIELD, Sedalia, Missouri.

Trade Report.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 28, 1886.

Scotch Pig.—There is no change whatever to report in this market; we therefore continue last week's quotations, as follows:

Coltness, alongside, Glasgow. 47/6
 Langloan, " 44/6
 Gartsherrie, " 44/6
 Summerlee, " 46/6
 Cambro, " 43/6
 Glengarnock, " Ardrossan, 43/6
 Eglinton, " 43/6
 Dalmeilington, " 41/6
 Shotts, " at Leith, 45/6
 Carriage from Ardrossan to Glasgow is 1/4 ton.

Cleveland Pig.—The stereotyped "no change" represents the state of this market. Quotations remain the same as last week, f.o.b. shipping ports:

Middlesboro', No. 1 Foundry, 32/6
 " No. 2 " 31/6
 " No. 3 " 30/6
 " No. 4 Forge, 29/6

Bessemer Pig.—This market is substantially without change, and we continue last week's prices. W. C. Hematites are quoted 42/6 for mixed lots, Nos. 1, 2 and 3, equal portions, f.o.b. shipping ports.

Manufactured Iron.—The market is irregular, with no change in prices. We quote at works:

	£	s.	d.	£	s.	d.
Staff Ord. Marked Bars, 7 0 0 @ 7 10 0	7	0	0	7	10	0
" Medium " 5 10 0 @ 6 0 0	5	10	0	6	0	0
" Common " 4 17 6 @ 5 5 0	4	17	6	5	5	0
Hoops, 20 W. G. and over, 6 15 0 @ 6 15 0	6	15	0	6	15	0
" Common Best, 6 0 0 @ 6 10 0	6	0	0	6	10	0
" Medium " 5 5 0 @ 5 10 0	5	5	0	5	10	0
Sheets, 20 W. G. and under, 7 5 0 @ 8 0 0	7	5	0	8	0	0
" Ordinary Best, 6 5 0 @ 7 0 0	6	5	0	7	0	0

Steel Rails.—We have no change in prices to note from last week's report, viz., £3. 15/ @ £4, f.o.b. shipping ports.

Old Rails.—The Old-Rail market remains quiet. No change in prices. Old D. H.'s, c.i.f. New York, 60/.

Scrap.—Last week's report must be repeated—no change either in condition of market or prices. We quote Heavy Wrought, 50/; Bessemer Crop Ends, run of mill, 54/ @ 56/, c.i.f. New York.

Copper.—The market is a little steadier, and the price has improved about 10/. Best Selected, £46 @ £46.10/, and Chili Bars, £41. 15/ @ £42. 5/.

Tin.—The market continues to improve, and prices may be quoted 5/ @ 10/ better. Straits Tin, spot, £93. 10/ @ £94, and futures, £94. 5/ @ £94. 15/.

Tin Plates.—The market is decidedly steadier, but we should not be justified in changing quotations at present.

Tin Plates, 10x14, lat qual. Charcoal, 18/ @ 19/6
 " " " " 15/ @ 16/6
 " " " " 15/ @ 16/6
 " " " " 15/ @ 16/6
 " " " " 15/ @ 16/6

Spelter.—The market is weak, and last week's quotations are unchanged, viz.: Ordinary at shipping ports, £14. 2/6 @ £14. 7/6.

Lead.—The market is unchanged, and prices remain the same, viz.: Common English Pig, £13. 10/ @ £13. 15/.

Freights.—Steam from Glasgow to New York, 5/.

Financial.

Office of The Iron Age,
WEDNESDAY EVENING, April 28, 1886.

The labor specter has thrown its baleful shadow over the markets, and will not down. The demand for merchandise in some instances is paralyzed, the purchasing power of a numerous class having been diminished; the money market is disturbed, and in not a few instances manufacturers have chosen to close their establishments, or at least reduce their working force, rather than accumulate stock at a higher cost of production. The effect of strikes was most directly felt in the sugar market, the closing of refineries having checked the demand for raw and cut off exports of refined by increasing the price over 1¢ per lb. It may be mentioned incidentally as reflecting this influence that the east-bound shipments from Chicago were lighter last week than for many years, the total being but 16,883 tons, against over 60,000 tons for the corresponding week last year. At the same time an enormous movement of grain is taking place on the Lakes, the pioneer fleet from Chicago conveying 5,000,000 bushels, which will be hastened to tidewater for export, but the stimulus lately imparted by the belligerent attitude of Greece no longer operates. The Transcontinental freight war has not been formally settled, but the Union Pacific is said to favor an advance on California business to 50% of the old tariff, and other companies now pressed with non-paying business have moved in the same direction.

On the optimistic side the most noteworthy feature is the further extension and development of railway lines in the Northwest, creating an immediate demand for the products of our iron and steel works, besides opening prospectively an enormous area of fertile lands to immigration and culture, and affording employment for surplus labor. Last week the proposition was an issue of \$20,000,000 bonds in behalf of the Chicago and Northwestern, partly applicable to improvements, and now \$10,000,000 are wanted for the extension of the Chicago,

Rock Island and Pacific Railroad system. Altogether trade holds on remarkably well. The clearings of 30 cities show a gain of 15% compared with last year, against 17.6% gain the previous week. Outside of New York the gain is 13%, against 10% the previous week.

The Stock Exchange market was dull and featureless, with transactions confined to professional traders. The settlement of the Lake Shore troubles and partial restoration of freight rates on the Pacific roads were the only events specially tending to influence prices. To-day prices were lower, compared with Saturday, it being apparent from sales of long stock that speculative purchasers felt less encouragement. Quotation as follows: Louisville, 36 1/4; Lake Shore, 80 1/2; Burlington and Quincy, 133; Consolidated Gas, 98 1/2; Lackawanna, 125 1/4; Delaware and Hudson, 99 1/2; Erie, 24 1/2; Milwaukee, Lake Shore and Western preferred, 76 1/2; New York Central, 101 1/2; Jersey Central, 49; Northwestern, 106 1/2; Oregon Transcontinental, 28 1/4; Reading, 21; Richmond and West P., 25; St. Paul, 86 1/4; Omaha, 39 1/2; Texas and Pacific, 8 1/2; Union Pacific, 50; Western Union, 63 1/2.

United States bonds closed as follows:

	Bid.	Askd.
U. S. 3 per cents	101	102
U. S. 4 1/2, 1891, coupon	112 3/4	113 1/4
U. S. 4 1/2, 1897, coupon	112 3/4	113 1/4
U. S. Currency 6s, 1890	136 1/4	137 1/4
U. S. Currency 6s, 1896	130	—
U. S. Currency 6s, 1897	132	—
U. S. Currency 6s, 1898	135	—
U. S. Currency 6s, 1899	136 1/4	—

Accounts from the West are generally more favorable.

Money seems quiet and easy at 2 @ 3 1/2 on call; 60 day and four months' indorsed paper, 3 1/2 @ 5%. Offerings are limited. The bank return for the week shows an increase of \$3,564,475 in surplus reserve.

The imports of merchandise at this port during the week were \$810,000 above that of the previous week, the total valuation being \$8,020,100, of which \$2,374,000 represents dry goods, making the aggregate \$137,269,073 since January 1, against \$126,306,000 for the same time in 1885, and \$148,454,000 in 1884. The exports of merchandise from this port during the week were \$951,917 above those for the previous week, the total valuation being \$6,568,682, making the aggregate since January 1 \$95,252,927, as compared with \$108,615,599 for the same time last year, and \$99,413,186 in 1884.

According to the Custom-House reports the imports of specie at this port during the week were \$166,268, making a total of \$3,342,245 since January 1, and the exports for the same time were \$2,235,083, making a total since January 1 of \$23,784,224, as compared with \$10,286,605 for the same period in 1885 and \$37,873,481 in 1884.

Metal Market.

Copper.—Business in Lake Ingot is confined to a very small volume, the price for lots held by second hands ranging between 11.40¢ and 11.45¢. The opening of navigation finds the leading Lake company with a comparatively small stock. Usually it enters the spring with the November, December, January, February and March product on hand. This year the output of the two first months named was disposed. In spite of this and of the fact that the product of 1886 is not greater than far than 1885, the future of the market is uncertain. The weakest spot is the pressure to sell, in the Naugatuck Valley, the output of a Montana mine, which has latterly increased to over 1,000,000 lb. a month. This Copper is selling at low prices, which are tempting away customers from the Lake companies, the difference being more than 1 1/2¢ per lb. The lack of harmony, too, among Copper producers in the United States, is such that there is no immediate prospect of concerted action. We quote Lake Copper, 11.40¢ @ 11.50¢ and outside brands according to quality, &c., 9 75¢ @ 10.25¢. London reports that the market is a little steadier.

Tin.—In sympathy with the London market, our market has developed a stronger tendency, with little business doing, however. We quote spot Straits, large lines, 20.75¢ @ 20.80¢. London reports an improvement of 5/ @ 10/. **Tin Plates.**—The market has been quiet, the demand being moderate. Stocks of Coke Tins are comparatively light. We quote at the close, large lines, ordinary brands, 7¢ box: Charcoal Bright, \$4.75 @ \$5.50; do. Ternes, \$4.35 @ \$4.75, and Coke, \$4.40 @ \$4.70, and Ternes, \$4.25 @ \$4.40.

Lead.—Has been offered freely for future delivery by the representative of leading Western works at 4.70¢, with the object, it is stated, of depressing the price of base bullion in the West. No business except in jobbing lots has been done during the week under review. Manufacturers are quoted as follows: Lead Pipe, 6 1/4¢ per lb.; Sheet Lead, 7 1/4¢; Tin-Lined Lead Pipe, 15¢, and Block-Tin Pipe, 40¢, allowing in trade for Old Lead delivered in New York, 3¢ per lb. Shot, Drop, 6¢; Buck, 7¢; Chilled, 7¢. Shot in 5-lb. bags, 1¢ per lb. extra.

Spelter and Zinc.—In spite of the reduced production in the West as the result of Coal strikes, the market remains inactive at 4.50¢ @ 4.60¢ for Common Domestic.

Antimony.—Has been quiet at 9¢ @ 9 1/4¢. Cookson, 8 1/2¢ @ 8 3/4¢ Hallett.

Trade Report.

New York Iron Market.

The stagnation which has befallen our iron market must be largely attributed to labor agitation. Employers generally, and among them ironmasters, who are their customers, decline to enter into any more business engagements, fearing that any hour strangers may enter their offices to present demands in behalf of their own men, whether the latter are content or not. The happenings of the past few weeks have shown that it makes apparently very little difference whether the relations of any individual employer with his men have been mutually satisfactory or not, and the result is that even the most liberal employers are forced into an attitude of hesitation so far as purchases of raw material are concerned. Those who had been following the policy of buying from hand to mouth, and who might under ordinary circumstances have begun to look after further requirements, are coerced by the turn of affairs to continuing on the same line. Those who are under engagements for raw material are ordering a partial or total suspension of deliveries. This movement in calling a halt to shipments is due to a number of causes. In some instances it is merely done for effect upon the workmen, to show them that their employer is "ready for a strike." In other cases the suspensions of mining coal in the Clearfield and other regions is causing idleness in the mills, and, finally, there is a widespread falling off in the demand for product. Conservative business men hold the view that this striking epidemic has gained such headway that confidence in future industrial peace cannot be restored for many weeks to come. It is urged that, like other diseases, it must run its course. To what extent the organizations forming among employers in many branches of manufacturing will aid in restoring the men to reason remains to be seen. Meanwhile business is halting. Much of it is, of course, merely deferred, and when it is placed may be the cause of undue advances. A good deal of it, too, is irrevocably lost, and employers and employees both will be forced to bear their part of the burden. These are the causes which have been instrumental in making the following review of the past week's market merely the repetition of former prices, with hardly a single noteworthy transaction to break the monotony of dullness. With a feeling of unrest among the men engaged in such industries as the Anthracite Coal mining and in some branches of the Iron trade, the outlook for the immediate future is not very bright.

American Pig Iron.—The market is very quiet and steady, though a diminution of the consumption is apparent from lessened delivery on contracts and the absence of sales of even moderate-sized lots. No efforts are being made to force sales, since that could only be accomplished by sacrifices. On the other hand, buyers, when they do need iron, must pay full prices for it, stocks being so low that furnaces can readily afford to accumulate a little. We quote for standard brands, tidewater delivery, \$18 @ \$18.50 for No. 1 X Foundry, \$17 @ \$17.50 for No. 2 X Foundry, and \$16 @ \$16.50 for Gray Forge. Outside brands are 5¢ below these quotations.

Scotch Pig.—The market is very quiet. We quote nominally as follows for small lots: Coltness, \$20 @ \$20.50 to arrive; Gartsherrie, \$19.50 to arrive; Shotts and Langloan, \$20.50 to arrive; Carnbroe and Glengarnock, \$19.50 to arrive; Summerlee, \$20 to arrive; Dalmeilston, \$19 to arrive; Eglinton, \$18 @ \$18.50 to arrive, and Clyde, \$18.50 @ \$19 to arrive. Concessions are made on 100-ton lots.

Bessemer Pig.—We note a sale to a Steel works in New England of 3000 tons of Foreign Bessemer Pig. We continue to quote Foreign, \$18.75 @ \$19.25, ex-ship, and Domestic Bessemer, \$18 @ \$18.50 at furnace.

Spiegel Eisen.—No new business is reported. We quote 20 % English Spiegel Eisen, \$26 @ \$26.50.

Bar Iron.—Under a small current business the market remains dull and without much strength. We quote for delivery here in round lots: Common Iron, 1.6¢ @ 1.70¢; Medium, 1.70¢ @ 1.75¢; and Refined Iron, 1.75¢ @ 1.9¢. Store prices are 1.75¢ @ 1.80¢ for Common, 1.85¢ @ 1.90¢ for Medium, and 1.9¢ @ 2.2¢ for Refined.

Structural Iron.—The following were the bids for the Iron and Steel work for the proposed Harlem River Bridge:

King Bridge Mfg. Co.	\$1,180,000.00
Phoenix Bridge Co.	1,116,000.00
Union Bridge Co.	887,800.00
Fassale Rolling Mill Co.	880,152.00
N. J. Steel and Iron Co. (Metal)	890,155.28
N. J. Steel and Iron Co. (Whole work)	2,596,750.19

The contract has not yet been awarded. We quote for Angles 1.95¢ @ 2.10¢, delivered, and Tees at 2.35¢ @ 2.40¢ for round lots. Steel Angles are quoted 2.35¢ @ 2.45¢, according to quality. Store quotations remain 2.25¢ @ 2.4¢ for Angles, and 2.6¢ @ 2.7¢ for Tees. American Beams and Channels are 3¢ base from dock for all orders.

Plates.—We quote for round lots: Common or Tank, 2.15¢ @ 2.20¢; Refined, 2.4¢ @ 2.5¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.4¢ @ 3.5¢; Extra Flange, 4¢ @ 4.4¢. For

small lots of Steel Plates the quotations are as follows: Ship, 3¢ on dock; Tank, 2.5¢ at mill asked; Boiler, 3.4¢; Shell, 3.4¢; Flange, 4.4¢.

Merchant Steel.—Quotations for the range from ordinary to good grades are as follows: American Tool Steels, 7 1/2¢ @ 9¢; Tool Steel of special grades and finer qualities, 12¢ @ 20¢; English Tool, 13¢ @ 15 1/2¢; common grades, 7¢ @ 9¢; Crucible Machinery, 4.5¢ @ 6¢; Round and Flat Spring, 2.6¢; Round-Edge Tire, 2.6¢; Square-Edge Tire, 2.9¢; Toe Calk, 2.7¢; Sleigh Shoe, 2.8¢; Open-Hearth Machinery, 2.8¢, and Bessemer Machinery, 2.5¢, with freight allowance.

Steel Rails.—There have been no sales of any consequence on the part of the Eastern mills, who are so well supplied with orders for summer delivery that it is difficult to place even moderate lots, for which the market is firm at \$35. For fall delivery nothing has been done, though a number of round lots are in the market. The Western Steel Co. have to date taken about 18,000 tons.

Steel Wire Rods.—The market is very dull. We quote nominally \$39.50 @ \$40.50.

Old Rails.—There are rumors of one or two transactions. Holders both of American and Foreign Old Rails are offering freely at \$20, but are unable to obtain bids better than \$19.

Scrap.—The market is dull. We quote nominally \$19.75 @ \$20.

Rail Fastenings.—We quote Spikes, 2.20¢ @ 2.40¢; Angle Fish Bars, 1.75¢ @ 2¢; Bolts and Hexagon Nuts, 2.75¢ @ 3¢.

Messrs. G. M. Stetson & Co., 69 Wall street, are agents of the Port Henry Steel and Iron Co., whose Clapp-Griffiths Steel Ingots they are now introducing.

Metal Exchange.

The following transactions are reported:	
THURSDAY, April 22.	
25 tons Straits Tin, May.....	30.70
SATURDAY, April 24.	
5 tons Tin, May.....	30.70
5 tons Tin, June.....	30.70
MONDAY, April 26.	
5 tons Tin, May.....	30.70
5 tons Tin, July.....	30.70

Philadelphia.

Office of The Iron Age, 230 South Fourth St., PHILADELPHIA, April 27, 1886.

Pig Iron.—The market shows no special change, the demand being slow and irregular, with only very light offerings. There is no pressure to sell, however, so that prices are tolerably well maintained, although the impression gains ground that the extreme figures which prevailed a few weeks ago are not likely to be repeated for some time to come. Prices are a little unsettled all through the list, and exact quotations not easy to give, as transactions depend more than ordinarily upon special circumstances. Some furnaces have nothing to offer for immediate delivery; some may have an excess of one grade, others may have another grade, and so on all through the list. There is no certain market at a certain price, as there was a few weeks ago, so that quotations that fit one case might not by any means fit others. But all recognize the fact that prices are easier and that sales cannot be made in large lots unless by making concessions of more or less importance. The most surprising feature is in the continued scarcity of good brands. Notwithstanding the undoubtedly large production, it is quite a difficult matter to place an order for more than 50 or 100 tons of a standard brand and get prompt delivery, as the iron is not there. By trying two or three or perhaps half a dozen brokers, quotations at about \$16.50, \$17 and \$18.50 can be had on odds and ends, but there are very few that can offer a line of 500 or 1000 tons standard brands, although some will enter the order by getting a little time in making deliveries. In a few words, there is but little iron for sale and an equally limited demand. Prices not notably lower, but have a tendency in that direction. Sales at \$18.25 @ \$19 at tide for No. 1 Foundry; \$17 @ \$17.50 for No. 2, and \$16.50 @ \$17 for Gray Forge, chiefly inside figures. Alabama Irons are offered at \$16, \$17 and \$18, ex ship, but would doubtless be shaded a little on firm offers for good-sized lots, but there is very little demand.

Foreign Iron.—There is nothing doing in Bessemer, although it is not unlikely that \$19 would be accepted for ordinary brands on a firm offer and \$19.75 @ \$20 for special brands. There is some inquiry for 20 % Spiegel, and prospects of sales at about \$26, as bids of \$25.50 have been made for large lots.

Blooms.—Market very quiet, although small sales are reported at about last week's quotations, viz.: Slabs for Nail Plate, \$30 @ \$31 at tide for Foreign and \$30 at mill for Domestic, and from that up to \$35 for higher qualities; special grades for Boiler Plates and other uses requiring high tensile strength, \$36 @ \$39. Other Blooms as follows: Charcoal, \$53 @ \$54; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$34 @ \$35, and Ore Blooms, \$35 @ \$36.

Bar Iron.—The demand shows no great improvement, although the mills are pretty well employed, chiefly on specialties. The trade in ordinary Merchant Bars is quite disappointing, but the continued demand for Skelp Iron fills up considerably and enables the mills to run well up to their full capacity. The scarcity of Coal is an important factor, and, besides being dearer, is hard to get at any price, which, with other items of increased cost, has a tendency to stiffen prices of the finished article. The outlook is one of uncertainty, however, and the feeling anything but cheerful. Prices are about 1.7¢ @ 1.8¢ for medium quality of Bars, 1.85¢ @ 1.9¢ for Best Refined, and 1.82 1/2¢ @ 1.85¢ for Skelp, with very liberal sales of the last named.

Muck Bars.—Prices are a shade easier; sales at \$29.50, delivered for 5000-ton lots; \$30 is the usual quotation for smaller quantities.

Plate and Tank Iron.—There is more inquiry for Plate Iron, and, as the mills have nearly all three or four weeks' work on hand, prices have a firm appearance and not unlikely to go a little higher. The demand is of a general character, nothing specially large, but from well-distributed sources, indicating a large consumption. Inquiries within the past few days lead to the opinion that there will be a good many orders coming in within the next two or three weeks, for which reason full quotations are maintained, and in some cases a slight advance asked. Sales at about the following prices: Ordinary Plate, 2.05¢ @ 2.1¢; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5¢; Fire-Box, 4.25¢; Steel Plates, Shell, 3.25¢; Flange, 3.5¢; Fire-Box, 4¢.

Structural Iron.—There is no special change to notice, although one or two large orders have been given out, including one for about 8000 tons for the Harlem Bridge. The mills have plenty of room for new business, however, as deliveries on former contracts are not called for as rapidly as was expected; hence orders for immediate delivery are readily placed. The outlook is considered somewhat improved, nevertheless, and plenty of business is expected as the season advances. Quotations about as follows: 2¢ @ 2.05¢ for Angles; 2.1¢ @ 2.2¢ for Bridge Plate; 2.4¢ @ 2.5¢ for Tees, and 3¢ for Beams and Channels.

Sheet Iron.—The demand for Sheet Iron is not large, but Plates are in good request, and in this way the mills are kept pretty well employed. Prices are unchanged but slightly irregular, and low figures have been quoted when requirements as to quality are not very rigid. In a general way quotations for good makes are about as follows, with the usual concessions on large lots, viz.:

Best Refined, Nos. 25, 27 and 28.....	4¢
Best Refined, Nos. 18 to 25.....	3 1/2¢
Common, 1/2¢ less than the above.....	
Best Bloom Sheets, Nos. 25 to 28.....	4 1/2¢
Best Bloom Sheets, Nos. 22 to 25.....	4 1/4¢
Best Bloom Sheets, Nos. 16 to 21.....	3 3/4¢
Blue Annealed.....	3 1/2¢
Best Bloom, Galvanized, discount.....	60¢
Common, discount.....	65¢

Steel Rails.—There is not the slightest change to notice in this department. The demand is good, prices firm and mills very full of work. A good many orders for summer delivery have yet to be placed, and for such \$34.50 @ \$35 at mill are firm quotations, with perhaps half a dollar reduction for winter and spring deliveries. There is no urgency to do business, however, as there is no immediate probability of change in price in either direction, so that parties seem inclined to wait developments before making further engagements.

Old Rails.—It is difficult to quote the market correctly, as the demand is so irregular and uncertain. The immediately available supply is not large, but is still in excess of the demand, so that prices are barely steady. A 300-ton lot extra quality sold at \$21.25, Philadelphia, but in ordinary cases it would be hard to find buyers at over \$20.50 for good-sized lots. There are sellers at \$21; bids hard to get unless quality, quantity and delivery are about what buyers are looking for, conditions not easily met; hence the uncertainty in regard to quotations.

Scrap Iron.—The feeling is rather weak, and, although prices are nominally unchanged, it is difficult to find a market without conceding something in buyers' favor. Ordinary quotations about as follows: No. 1 Wrought Scrap, \$20 @ \$22; No. 2, \$14, \$15.50 @ \$14.50; Turnings, \$14 @ \$14.50; Old Car Wheels, \$15 @ \$16; Old Steel Rails, \$20 @ \$22; Fish Plates, \$23.50 @ \$24.50; Cast Scrap, \$14 @ \$15; do. Turnings, \$10 @ \$10.50.

Wrought-Iron Pipe.—There is but little change to note in the situation in this market. The demand continues brisk and the mills are busy, being barely able to keep pace with orders, which, though not for large lots, are numerous and frequent. Prices are very firm, especially so on Boiler Tubes, and remain as quoted last week, viz.: Lap-Welded Black, 60 %; Butt-Welded Black, 42 1/2 %; Butt-Welded Galvanized, 32 1/2 %; Lap-Welded Galvanized, 42 1/2 %; Boiler Tubes, 55 %.

Nails.—The market continues quiet, though a larger business is reported for the week just closed. No large sales are to be noted, but general buying has brought the aggregate up to more satisfactory figures. Prices remain as quoted last week, viz., \$2.40 to the trade at store, with rebate about as usual for large lots.

Hardware.—Inquiry shows a continued increase in the demand. The jobbers report a steady receipt of orders for all classes of goods, and in larger quantities. This improvement is as yet confined to the custom nearer home, the trade with the Southwest

still showing the uncertainty and distrust prevailing there. A greater confidence is expressed, however, as to the final outcome of present troubles, and opinions agree that, while the demand may be delayed a while longer, it will come sooner or later. This feeling, which is growing stronger daily, tends to keep the general market quiet and easy, and maintains firm prices.

Hardware Specialties.—Manufacturers of patented and special articles of Hardware report a good demand, and the foundries are well filled with orders, some being considerably pushed to get work out on time. Judging from the present business, there is a fair prospect of a good season.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue, PITTSBURGH, Pa., April 27, 1886.

While there is a fair degree of activity in general business, it is not up to what was generally expected, and there is a great deal of complaining in nearly all departments of trade. Nearly everything appears to be overdone, and with an active competition there is but little margin for profit. Here in Pittsburgh there has been no change in the labor situation during the past week; no new strikes have been inaugurated, nor any of the older ones adjusted. The Amalgamated Iron Association, it is intimated, will ask for an advance in the wage scale for iron-workers the coming year, and, if so, a hitch is not improbable, as the iron business is not in a condition to stand it at present, and there is not much prospect for any immediate improvement.

Iron Ore.—The consumption hereabouts continues large, and nearly all the furnaces are in blast and will continue so for some time to come, as many of the furnaces are contracted ahead. However, a Cleveland broker who was in the city yesterday reports the Ore trade as being rather quiet in that market; he reports that there is a good deal of opposition to the advance in Ore freight, which goes into effect May 1, and there is a possibility that the railroads may back down at the last moment, although it is not probable.

Pig Iron.—Our city furnaces are still holding at former prices and refusing to sell for less, and, as they are nearly all sold ahead, they can afford to be stiff; but other Irons are being offered for less and there is no doubt about the market being weaker. This may appear strange, in view of the enhanced cost of production, which it is now reasonably sure will be still further increased on the 1st of May by an advance in the price of Coke. We hear of a sale of 3000 tons Gray Forge (native-ore Iron) at \$15.50 cash, whereas our city furnaces are refusing to sell under \$16, cash, on furnace bank. Bessemer Iron is also weaker, being offered at \$19, cash. Southern Irons have been offered here freely of late, but as a rule consumers do not take to them. We quote as follows:

No. 1 Gray Forge.....	\$16.50 @ 1 mos.
No. 2 Gray Forge.....	15.75 @ 16.00, 4 "
All-Old Mill.....	17.50 @ 18.00, 4 "
Mottled and White.....	15.50 @ 15.75, 4 "
No. 1 Foundry.....	15.00 @ 15.50, 4 "
No. 2 Foundry.....	17.00 @ 17.50, 4 "
Foundry, Charcoal.....	20.00 @ 24.00, 4 "
Cold-Blast Charcoal.....	24.00 @ 27.00, 4 "
Bessemer Iron.....	19.50 @ 20.50, 4 "

Muck Bar.—There has been a little more doing the past week, but prices are no better. We can report sales of 1000 tons at \$28, four months, which is the ruling price.

Manufactured Iron.—The market for all kinds of Finished Iron continues in an unsettled and unsatisfactory condition, and, while it is hoped that there will soon be a change for the better, the outlook is not very encouraging. Orders are not coming forward very freely, and but few of the regular merchant mills are working up to their full capacity. Some mills are busy, having large contracts for Skelp Iron, and others have contracts for Structural and Bridge Iron secured early in the year, but at the present time there is but comparatively little offering of any kind, which may be attributed in part to labor troubles. We continue to quote first quality Iron on a basis of 1.70¢ @ 1.75¢ for Bars; Old Rail Iron one to two-tenths less.

Nails.—The situation here remains unchanged. As the strike still continues the few nails being sold here are made at competing points, and will continue to be the case as long as the strike holds out and the machines stand idle.

Wrought-Iron Pipe.—The Pipe mills still have all they can do, and the indications are that this will continue to be the case all this year; nor is this confined to Pittsburgh, as all the Pipe mills in the country are busy, although the demand from natural-gas companies makes business more active here than elsewhere. Prices firm, but unchanged. Discount on Black Butt-Welded Pipe, in carlots and upward, 45 %; less than a carload, 42 1/2 %; Galvanized do., in carlots, 35 %; less than a carload, 32 1/2 %; Black Lap-Welded Pipe, in carlots, 62 1/2 %; less than a carload, 60 %; Boiler Tubes, 55 % off regular list; 2-inch Oil-Well Tubing, 13¢ @ 14¢ foot, net; 5 1/2-inch Casing, 40¢; 8-inch Drive Pipe, \$1.30.

Old Rails.—The market continues dull and considerably demoralized, and prices are weak and irregular. Consumers, in expectation of a still further decline, are buying only as their immediate necessities require, and this will continue to be the case until there is some assurance that the lowest price has been reached. We can report a sale of 800 tons Old Iron Rails at \$21, which

is regarded as the market price. Old Steel Rails may be quoted nominally at \$19 @ \$20.

Steel.—There is not the demand there was a month or six weeks ago, but the mills generally are pretty well employed, mostly, however, on orders booked some time ago. Brokers who make a specialty of Steel report business dull. Prices remain about as last quoted. Refined Best Tool Steel, 8¢ @ 9¢. The orders for this are mostly small and price is governed by size of order; Crucible Machinery, 3 1/4¢ @ 4¢; Open-Hearth do., 2 1/4¢ @ 2 3/4¢; Steel Boiler-Plate all way from 4¢ to 4 1/2¢; Steel Nail Slabs nominal at \$29 @ \$30 1/2 ton; Bessemer Blooms and Billets, \$31 @ \$33; Blooms Ends, \$22; Rail Ends, \$22.50 @ \$23.

Steel Rails.—Demand has fallen off, but as the mills are all sold several months ahead prices are steady at \$36 @ \$36.50, cash at mill, for Heavy Sections.

Railway Track Supplies.—There is a fair business, but prices remain unchanged. Spikes, 2 1/4¢, 30 days, delivered; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2 7/8¢ with Square and 2 8/8¢ @ 3¢ with Hexagon Nuts.

Old Material.—Is still reported very dull, and prices are weak; No. 1 Wrought Scrap may be quoted at \$18.50 @ \$19 1/2 net ton; Wrought Turnings, \$13.50 @ \$14; Old Car Axles, \$23.50 @ \$24; Cast Borings, \$12, gross ton; Old Wheels, \$16 @ \$16.50, gross ton.

Coke.—It is expected that Blast-Furnace Coke will be advanced to \$1.50 @ ton on the 1st of May. There is a good deal of complaint being made on the part of consumers at the proposed advance.

Chicago.

Office of The Iron Age, 86 and 88 Clark St., CHICAGO, April 28, 1886.

Hardware.—Jobbers report that trade continues quite satisfactory, though the strike mania has disturbed all business enterprises throughout the Western country. The aggregate amount of goods purchased is made up from small lots that are an immediate necessity to the retailer. There is no inclination to buy in advance of demand by the majority of dealers, which makes a marked difference in sales of Scythes, Snaths, Cradles and the like. Steel goods have sold well, and the better class of stock is said to be in short supply. The advance in Sandpaper was a surprise to the trade in general. Manufacturers of Screws are greatly dissatisfied over the prices made by jobbers, which they claim are less than what makers can afford to sell them at in job lots at the present time. Carriage Goods and Wagon Stock are in extra good demand, and Heavy Hardware of every description is selling fairly well. While prices continue regular, there is a noted weakness on the whole line of Hardware. Neither makers nor jobbers are as firm in their demand as they were earlier in the season, and concessions to make sales are not infrequent. The latter half of the month in all trades is said to be less active among heavy buyers, orders throughout being of a sorting-up character.

Barb Wire.—Market dull. Makers are becoming impatient to make sales of large quantities of Wire, but the present price is no inducement to buyers. The steadiness with which the price has been maintained and the dullness of trade fortify purchasers in their position that they have nothing to lose by withholding orders for large lots. They can obtain their Wire as they want it in small lots at about the same price that they would have to pay for larger quantities, therefore losing nothing in price; investing less capital and obtaining the Wire immediately when they want it gives them all the advantage they could ask, besides leaving them in a position to purchase in larger quantities if prices should break. Now and then some cuts are noted in different parts of the country, but in no case sufficient to create dissatisfaction to maker or dealer. It nevertheless gives foundation for the impression that present quotations will not remain firm very long. Jobbers quote from store 4¢ for Painted Wire, 4 1/4¢ for Galvanized, and 1/2¢ off in carload lots.

Nails.—Jobbers report that there is a fairly good demand in small lots. They say that the season is so far advanced that load buyers are exceptionally scarce. Trading in large lots has been considerably less this season than customary. This may be accounted for by the downward tendency that has characterized the Nail market since the 1st of February, at which time the highest point of the year was touched. Iron Nails are now quoted from store in small lots at nominally \$2.35, but frequently shaded 5¢ @ keg and perhaps more when a remarkably good order is in view. Steel Nails are quoted at \$2.60 from store, and also shaded 5¢ @ keg in many cases. It is hardly just to claim that there is a market price that could be relied upon. Every dealer seems to consult his own interests in the matter, and sells according to the stock and circumstances. Makers are offering Iron Nails freely without asking any definite figure as an inducement to jobbers to make a bid for the lot. Nearly every broker in the Iron business has Nails to sell and is writing to country merchants everywhere trying to secure orders. This has a tendency to demoralize buyers and make legitimate dealers disregard all uniformity in prices.

American Pig Iron.—Buyers take no interest in looking toward future supply.

Their every thought seems to be centered upon the developments of the labor trouble the 1st prox., and are shaping their affairs so that they will be able to meet either a strike or lockout and remain closed for several weeks. Most of the large concerns are making efforts to get everything contracted for out of the way and sufficient goods in stock to supply what little demand there may be in case of an extended trouble.

The occurrences in the market outside of these features are so few and far between that nothing of an interesting character is visible. Now and then a buyer is found, whose works are in such shape that he will at least require some iron under all circumstances, who makes inquiries for a lot of several hundred tons. Where such a case is generally known in the trade the life of the buyer becomes a burden until he has placed his order. Sellers are anxious to place contracts, and yet they do not show any great weakness in price in attempting to make the sale. Sellers recognize the fact that buyers are waiting more as a matter of policy than from fear that they will not have plenty of work after the disturbing elements have been pacified. Nearly the entire trading in pig iron is now done in carload lots, which are quoted on Lake Superior Charcoal at \$20.50 @ \$21 for Nos. 1, 2 and 3, the higher numbers commanding 25¢ @ 50¢ advance. There appears to be no change in the price of coke irons. The makers, if anything, are more firm than on charcoal brands. No. 1 coke is quoted at \$19.50, and No. 2 at \$18.75 @ \$19, but there does not seem to be the same amount of demand for the iron. The strength that appears on different brands of iron is centered largely in the increased cost of manufacture, present and prospective, and, in fact, it is said that both in charcoal and coke irons profits are no greater than at the time these irons were selling at the lowest point during last summer. Cinder mixed irons are in less demand and vary in price according to quality, quotations ranging from \$18 to \$19. Ohio Standard Blackbands in the best grades are not plentiful, and are held tolerably firm at prices ranging from \$20 to \$21. Nominal quotations on Southern Iron continue to be \$18.50 for No. 1 Foundry, \$18 for No. 2, and \$17.50 for No. 3. It is said that some small lots have been sold at 50¢ a ton advance on these prices for No. 1, but the market does not warrant higher quotations. The demand continues light and buyers indifferent as to securing the iron either for present or future delivery. The uncertainty of obtaining shipment on some brands of iron in case of railway strikes gives preference to those made nearest to the place of consumption, which works very strongly now against the sale of Southern irons here. Of the entire market it is said that the pig-iron salesmen have experienced for years.

Merchant Steel.—As the end of the month approaches trade has gradually fallen off and now dealers in the better grades report that they are having very little inquiry. They claim, however, to be holding firmly to past prices, and that no changes are contemplated. We continue to quote nominally: Tool Steel, ordinary grades, 7½¢ @ 8½¢; Extras, 11¢ @ 13¢; Specials, 16¢ @ 20¢; Open-Hearth and Bessemer Spring Steel (standard brands), 2½¢; Flat Machinery, 2½¢; Round do., 3¢; Crucible Machinery, 4½¢ @ 5¢; Crucible Cast Plow Steel, 4½¢, and Patented Plow Steel, 5½¢.

Steel Rails.—Manufacturers report considerable inquiry during the past week for late summer delivery, but no contracts of importance were accepted, makers not wishing to obligate themselves to make or deliver stock that at the moment they cannot reasonably predict whether they will have the power to do or not. If all things turn out smoothly quite a number of small lots are on the market that will be placed the latter part of May. Mills are actively engaged in getting out work under contract, and continue their quotation of \$38 for first and \$34.50 for second quality.

Bar Iron.—The market is greatly demoralized in price, and consumers are at a loss to know what to purchase when they are in want of stock. The low rates made in the poorer classes of iron are quite an inducement, while the quality that they must necessarily expect at such prices retards them from placing orders for material that is an immediate necessity. Common or Old Rail Iron is quoted at 1.75¢ @ 1.80¢ rates from store in small lots, and some of the jobbers claim that they adhere to these prices. This, however, is scarcely reasonable when the same iron is offered by mills at 1.60¢ rates base in almost any quantity. The latter price could be shaded for round lots with a good share of extras to about 1.55¢, and even these figures would not be bottom if buyers could be found who would place orders for lots ranging from 100 to 300 tons. On Best Refined New Puddled Iron jobbers continue to quote 1.80¢ rates from store, and 1.75¢ @ 1.80¢ in carload lots. Trading in this class of material is less active than a week ago, but prices are uniformly held at these quotations, and buyers show greater preference for this class of iron in order to avoid the possibility of getting mixed stocks. The Calumet Double Refined is being tried by a great many of the important manufacturers of the West, and quite a number of duplicate orders are received from those who have been experimenting with the quality. They quote for No. 1,

3¼¢; No. 2, 2¾¢, and No. 3, 2¼¢ to the general consumer. This price would be shaded to jobbers, but as yet the latter have shown no desire to handle the iron, as it is a new brand and unknown to the trade. Consumers report that if the Calumet Co. succeed in keeping up the standard adopted this iron will succeed much of the Foreign Iron that is now used for extra fine work.

Structural Iron.—From store there continues to be a fair trade for Beams, and makers of Cast-Iron shapes say that they are having a good demand for columns in small lots intended for buildings where retail stores are placed on the first floor. Hough, Ketcham & Co. report that they have been called upon to do a great deal of figuring on large buildings, both in this city and other places, but the conditions upon which figures are furnished almost invariably stop negotiations for the time. Capitalists are not inclined to enter into building contracts, and the whole subject of building is suffering from the present labor agitation. Combination prices on Beams and Channels continue to be maintained, and no other material alteration is noted in prices of other shapes.

Galvanized Iron.—The small-lot trade noted in our report a week ago has declined during the past week, and the market is again quiet. Manufacturers have been trying very hard recently to place orders with jobbers, but without avail. Cornicemen are not buying much for building purposes for immediate delivery, and are unwilling to place orders for future. Other classes of manufacture where Galvanized Iron is used are also quiet. Jobbers quote, as heretofore, 60¢ off on Juniata, and 60 and 10¢ off on Charcoal. Prices that have been named by manufacturers on some of the cheap grades would allow these figures to be shaded 5¢ from store.

Old Wheels.—There is but one sale of a small lot reported this week at \$16. There have been other inquiries, but this price does not suit the seller. Holders continue to ask \$16.50 @ \$17, though there is not much probability that they will realize these prices for some weeks to come.

Scrap Iron.—The falling off in demand for Scrap has caused sellers to weaken in price. No. 1 Wrought is now quoted at \$18 for ordinary and 50¢ @ 1 ton advance for special grading. No. 1 Mill they continue to quote at \$14, and No. 2 at \$9. Car Axles are quoted at \$21; Horse Shoes at \$22; Steel Wagon Tires and Springs are quoted at \$13.50; Locomotive Tires, Steel, \$22; Plow Steels, \$10.50. The demand for stock is so very light that these prices cannot be given as actual selling figures, but approximately express the value at which dealers hold their stock.

Messrs. W. S. Mallory & Co. have removed their office and warehouse to Nos. 10 to 22 West Randolph street. Through the change they have obtained superior switching and railroad facilities and increased capacity for their large stock of Iron and Steel Boiler and Tank Plates, Sheet-Iron Tubes, Rivets, &c.

Messrs. Anderson, Bros. & Co. have removed their office to Rooms 8 and 9, No. 53 Dearborn street. The home office and works are at Youngstown, Ohio.

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts., CHATTANOOGA, April 29, 1886.

All kinds of business and all lines of trade are now in active condition. The marks of the recent floods are still visible, but in almost every instance where mills were swept away they are being reconstructed, and in most cases with more costly structures and much improved machinery. The result is that many old "rattle-traps" will be replaced by plants that will be a credit to any country. The late spring has given a setback to some extent to the cotton planting business, and it is predicted that much less acreage will be planted this year than for some years back. Railroad building at the present time is also receiving a great impetus in the South. What is known as the Georgia Midland is probably the first important trunk line that will materialize. This road will run from Atlanta to Columbus as direct as possible. The contracts for the entire work have been let to a wealthy corporation, who put 750 men at work last week, and will increase their force as fast as they can. Another important line is receiving the attention of a large number of heavy capitalists, and that is the line direct from Chattanooga to Augusta, Ga. This line will be 221 miles in length, and will not depart from a straight line over 5 miles on the entire route. It will be about 58 miles nearer to the Southeast Atlantic Coast from the great West than any other line at present built, and will pass through a section of country heretofore almost wholly deprived of railroad facilities, and a section of country, too, that is probably the finest of any in Georgia. It is made up mostly of small and very fertile farms, besides which the road will pass directly through the great gold-bearing lands that have been so long and favorably known as the "Gold Belt of Georgia."

Pig Iron.—There have been many features that have transpired since our last report in the pig-iron market that have certainly been encouraging to the producer. There has been quite an unexpected demand from almost every section of the country, which can hardly be explained, and at the present time there are pending sales which, if all are consummated, will aggregate something over 23,000 tons, at prices which will show no concession. The average sales for one furnace as taken from their books show that they realized for the months of January, February and March for their Nos. 1, 2 and 3 \$15.35 ¾ ton, out of which they had to pay the regular commissions to brokers. This price was at the furnace on cars. At the present time furnacemen are not feeling any uneasiness in regard to the future. The working of the different furnaces at the present time is quite satisfactory. Both the Chattanooga and Rising Fawn plants are working up to their full capacity and making a splendid article, mostly Nos. 1 and 2. The Citico, after some tribulations, has got down to her normal condition, and is turning out from 98 to 103 tons per day of an excellent quality of Nos. 1 and 2 Foundry. The Dayton No. 1 is entering the field as a producer of a quality of iron that is finding ready sales in the markets north of the Ohio.

Cast Pipe.—The demand for this article is keeping up to the fullest capacity of the works. The enlargements which were commenced some two months since are nearing completion, and they will then have a capacity of more than double what they have now. Prices are ranging about the same.

Miscellaneous.—All the manufacturers of this district are running full, with every indication of a prosperous future; especially is this so of the Sash, Door and Blind business. In this particular line there appears to be no end to the demand from every section of the country. The Stove business is equally prosperous and shipments are being made to all quarters of the country, although the troubles of the West have somewhat curtailed shipments to that section.

Birmingham.

BERMINGHAM, ALA., April 29, 1886.

The effects of the late interruptions to business have about disappeared and matters have settled down to pretty much the same condition that existed four weeks ago. As is usual at this season, there is not much doing in any line, though manufacturing industries manage to keep up quite well as a rule. Several important projects have progressed considerably in the last week. The Kansas City railroad people are now preparing for unusually fast work on their road from here to Memphis. They promise to have 3000 men at work on it in 60 days, and to make of it the quickest job of railroad building ever done in the South. The engineering parties have been organized to start from here to-day, and the work will be let to contractors as fast as they can locate it. Arrangements for new furnaces have advanced. All the specifications have been settled upon for the Pratt Coal and Iron Co.'s projected plant, and the Linn Iron Works, which have been building blowing engines for them for some time, are to commence on three Whitwell-Cowper stoves for the first furnace right away, getting part of the fittings from Messrs. Gordon, Strobel & Laureau, of Philadelphia. (These will be the first Whitwell stoves ever built in any Birmingham shops.) The DeBardeleber Coal and Iron Co.'s project is about ready for the location of furnaces, a Pittsburgh expert being now due here to make an examination of the ground, and one of the local concerns now operating two furnaces has about matured its plans for a third. But the most important industry in prospect is the manufacture of Bessemer Steel. One hears now of various Ore deposits low in phosphorus not far from Birmingham, and the conviction that some of them will put the Bessemer process in operation here before long has taken hold upon the best business interests of the community, and more than one promising movement for an extensive Bessemer plant is engaging the minds of prominent iron men, some of them residents and some of them visitors.

Pig Iron.—Holds close to the slightly reduced prices of a week ago. The demand is about as good as could be expected with Western business annihilated by the railroad strikes. Another slight concession from railroads in the interest of better relations with the West has been made in the shape of a 5¢ reduction of freight rates, and business with the East has been facilitated by the addition of another carrier, the Louisville and Nashville Road having come down to the figures at which the Georgia Pacific and the railroads and steamer lines allied with it have been carrying iron around by way of Savannah.

Finished Iron.—Feels more and more keenly the labor troubles in the West. In the matter of prices about the only noteworthy fact is a disposition on the part of consumers who are not crippled by the strikes to close for fall delivery at present prices.

Nails.—Helena Nails are offered 10¢ lower than they have been, \$2.35 being now the card rate at the mills. An accidental bad shade in quality seems the basis of the concession; other Nails, both Iron and Steel, are firm at former prices.

Miscellaneous.—Orders for immediate delivery are probably less sought after than they ever were before. One concern have received business-like inquiries in the last few days from Pennsylvania, Ohio and

Nebraska. The Pennsylvania matter is a promise of a new and sensible plan of operation on the part of the inquirer, who is a manufacturer of an appliance sold all over the South. This requires some heavy castings, and the manufacturer wishes to have the latter made here in ton lots for his Southern business.

Coal and Coke.—There is no promise of better business in fuels until the furnaces now going up shall have been completed. Certain manufacturing enterprises in the city get a good Steam Coal at 80¢.

Lumber.—There is a big business doing in Lumber. Shipments are reliable again, and the unusual necessity created by the recent interruption to railroad traffic during the floods is being supplied. Prices are stiff.

Cincinnati.

APRIL 26, 1886.

Pig Iron.—Dealers here report a very quiet market in the past week. Transactions have been mainly confined to deliveries on old orders or filling new ones for current uses, usually in small lots. The late report of the Western Pig Iron Association of largely-increased supply of Coke Irons in the past month is claimed to be more apparent than real, as it is supposed that the modes adopted in the collection of such statistics must necessarily be inaccurate, although the greatest available caution may be employed. It is only the result of a great amount of labor that valuable and reliable statistics of this nature can be produced, requiring the co-operation of an army of correspondents to help, who are not always prompt nor always critical as to accuracy. The reports heretofore made are not wide of the accurate mark, but far enough sometimes to mislead, yet they are valuable. If such statistics are confined to the actual production of the furnaces in the United States, giving the production of Charcoal, Coke and Stonecoal furnaces in their respective regions, and comparisons of the same in divided times in the past year, and such reports as can easily be had of the quantity going into consumption, they would probably be an improvement on the old method, and all that is required to intelligently inform the public. Producers in the West and South are largely represented by dealers in Cincinnati, who in their work reach the markets of the United States and Canada with these Pig Irons. All express a desire that they may at all times be in possession of facts in statistics of good authority to enable them to deal intelligently with the trade. Quotations from sales in the past week:

Charcoal Foundry.	
Southern No. 1, 4 mos.	\$18.00 @ \$19.00
Southern No. 2, 4 mos.	17.00 @ 17.50
Hanging Rock, Best, No. 1, 4 mos.	21.00 @ 21.50
Hanging Rock, Good, No. 1, 4 mos.	20.00 @ 20.50
Hanging Rock, Good, No. 2, 4 mos.	19.00 @ 20.00
Coke Foundry.	
Ohio and West Pennsylvania, No. 1, 4 mos.	17.00 @ 19.50
Ohio and West Pennsylvania, No. 2, 4 mos.	17.50 @ 19.00
Tennessee, Alabama, Georgia and Virginia, No. 1, 4 mos.	18.00 @ 19.50
Tennessee, Alabama, Georgia and Virginia, No. 2, 4 mos.	17.00 @ 18.00
Silver-Gray Softeners.	
Ohio, No. 1, 4 mos.	17.50 @ 19.00
Ohio, No. 2, 4 mos.	16.50 @ 18.50
Ohio, No. 3, 4 mos.	16.00 @ 17.00
Other makes	15.00 @ 18.00
Forge.	
Sales various grades reported, cash	14.50 @ 17.00
Car-Wheel.	
Ohio Cold-Blast, 4 mos.	25.00 @ 26.50
Georgia and Virginia, 4 mos.	25.00 @ 27.00
Southern Warm-Blast, 4 mos.	18.00 @ 20.00
Southern Standard Warm-Blast, 4 mos.	23.00 @ 25.00
Hanging Rock Warm-Blast, 4 mos.	19.00 @ 20.00
Scrap.	
Market firm and sales. No report of prices, but quotable:	
Rails	\$30.00 @ \$31.00
Wheels	17.00 @ 17.50
Wrought, 100 lb.	.70 @ .80
Cast, 100 lb.	.60 @ .70

Prices quoted f.o.b. cars here, or less freight to Cincinnati when orders are filled for shipment direct from furnaces. Discount, 35¢ @ 50¢ ¾ ton for cash from time prices.

Detroit.

CHARLES HINROD & Co., dealers in Pig Iron, Detroit, Mich., report, under date of April 26, as follows: Notwithstanding the existence of some strikes among the railroads and the prospect of others going out in sympathy, it has not deterred some of the roads from ordering new cars, and should these strikes be definitely settled it looks as though there would be some pretty good-sized orders given for general railway equipment.

Pig Iron.—Lake Superior Charcoal has been quiet, with no transactions of any particular magnitude, but considerably more buying must be done quite soon, as the large amount of inquiries received would indicate that stocks in the hands of buyers are quite low.

Old Material.—Except Scrap Iron, there have been no transactions here. Altogether the market is not a particularly interesting one, but we do not feel that it has settled down into a summer state of quietness by any means. The market is fairly quotable to-day as follows:

Lake Superior Charcoal, all numbers.	
Lake Superior Coke, All Ore.	\$22.00 @ \$22.50
Lake Superior Coke, Cinder Mixed.	19.00 @ 20.00
Standard Ohio Blackband	30.25 @ 31.00
Southern No. 2	18.50 @ 19.00
Southern Silvery, Open	17.50 @ 18.00
Southern Silvery, Close	17.00 @ 18.00
Jackson County, Ohio Silvery	18.50 @ 19.25
American Old Iron Rails	22.00 @ 24.00
Old Wheels	17.00 @ 18.00

Bolivia has renewed diplomatic relations with the United States, and sent a minister to Washington.

Exports.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the port of New York, for the week ending April 27, 1886:

Dutch West Indies.	Quant.	Value.	British Honduras.	Quant.	Value.
Mf. iron, pkgs.	62	76	Hdw. pkgs.	7	35
Sew. ma., cs.	4	60	Nails, kegs.	22	106
Hdw., pkgs.	16	143	Newfoundland.		
Nails, case.	1	12	Blower	1	123
Danish West Indies.			Mf. iron, pkgs.	5	24
Hdw., cs.	24	24	Leghorn.		
Br. g'ds. case.	1	61	Pumps, pkgs.	3	110
Mf. iron, pkgs.	5	38	British East Indies.		
Nails, kegs.	24	80	Clocks, pkgs.	56	1,351
Christiana.			Guns, case.	1	132
Ag. imp. pkgs.	145	4,400	Azores.		
Hdw., cs.	22	293	Chain cables.	2	95
Bremen.			Mf. iron, pkgs.	13	109
Mach'y, pkgs.	15	1,126	Hdw., cs.	33	643
Cutlery, cs.	3	118	Anchors, pkgs.	8	222
Mf. iron, pkgs.	3	80	Ag. imp. pkgs.	3	50
Hdw., pkgs.	3	1,568	French Guiana.		
Tubing, case.	1	15	Sew. ma., case.	1	17
Antwerp.			Hdw., case.	1	4
Sew. ma., cs.	20	800	Naples.		
Gun matl., cs.	2	150	Ag. imp. pkgs.	1	38
Mach'y, pkgs.	1	25	Mexico.		
Copper matte, sacks.	300	2,500	Shot, kegs.	5	61
Hamburg.			Mf. iron, pkgs.	232	1,371
Tacks, cs.	6	32	Hdw., cs.	35	531
Ag. imp. pkgs.	223	8,825	Tacks, case.	1	12
Mf. iron, pkgs.	9	150	Br. goods, case.	1	28
Mach'y, pkgs.	18	2,093	Water closets,	2	87
Wire, case.	1	18	Clocks, cs.	2	17
Hdw., pkgs.	12	286	Nails, kegs.	9	53
Sew. ma., cs.	244	7,014	Pumps, pkgs.	12	801
Hdw., pkgs.	194	4,892	Steel plates,	4	54
Tinware, case.	1	24	Ag. imp. pkgs.	35	1,962
Clocks, pkgs.	66	1,380	Cartridges, cs.	14	308
Copper, case.	51	7,000	Sew. ma., cs.	29	705
Mf. iron, pkgs.	99	973	Shoe nails, case.	1	5
Copenhagen.			P. caps, case.	1	20
Mach'y, pkgs.	1	170	Mach'y, pkgs.	14	443
Hull.			Cutlery, cs.	54	755
Mach'y, pkgs.	1	50	Saws, cs.	2	220
Hdw., pkgs.	11	215	Spikes, kegs.	549	1,890
Ag. imp. pkgs.	40	3,911	Peru.		
Mf. iron, pkgs.	9	150	Nails, cs.	25	125
Clocks, cs.	20	373	Ag. imp. pkgs.	17	334
Glasgow.			S. pump.	1	350
Agateware, cs.	3	83	Cutlery, cs.	37	1,020
Hdw., pkgs.	34	669	Hdw., pkgs.	72	857
Mf. iron, pkgs.	2	40	Clocks, cs.	22	389
Sew. ma., cs.	4	607	Steel, pcs.	12	286
Iron drums,	8	85	Saws, cs.	2	60
Sew. ma., cs.	149	2,365	Ag. imp. cs.	18	227
Ag. imp. pkgs.	124	880	Cartridges, cs.	4	38
Mach'y, pkgs.	6	395	Wringers, cs.	3	22
Gibraltar.			Argentine Republic.		
Guns, case.	1	245	Clocks, pkgs.	251	4,563
Hdw., cs.	4	36	Hdw., pkgs.	31	985
Liverpool.			Ag. imp. pkgs.	72	786
Mach'y, pkgs.	29	1,863	Cartridges, cs.	28	507
Sew. ma., cs.	76	2,658	Pumps, pkgs.	100	344
Copper matte,	9924	55,900	Arms, cs.	4	405
Copper ore,	4400	40,000	Alexandria.		
Gun.	1	25	Pumps, pkgs.	1	15
Hdw., pkgs.	3	95	Brazil.		
Clocks, pkgs.	181	4,128	Scales, cs.	84	2,186
Pumps, pkgs.	3	100	Hdw., pkgs.	319	4,182
W. mills, pkgs.	3	50	Tacks, cs.	48	460
Guns, cs.	2	219	Tinware, bxs.	3	38
Copper, pkgs.	1309	21,958	Cutlery, bxs.	74	1,963
Ag. imp. pkgs.	350	6,071	Mf. iron, pkgs.	6	171
Copper, bars.	566	13,328	Revolvers, case.	1	101
Mf. iron, pkgs.	4	83	Pumps, pkgs.	46	567
Eyelets, cs.	3	260	Firearms, case.	1	86
Gun matl., cs.	2	200	Brass g'ds. cs.	4	95
Spring, bbls.	6	267	Prop'r blades.	4	39
Water wheel,	1	800	Clocks, pkgs.	13	320
Iron, pkgs.	1418	6,234	Nails, kegs.	321	815
Br. g'ds. case.	1	624	Cartridges, cs.	18	302
Leith.			Cot. g'ds. cs.	146	2,630
Ag. imp. pkgs.	64	112	Rifles, bxs.	5	304
Bordeaux.			S. nails, cs.	11	177
Sew. ma., cs.	50	609	Mach'y, pkgs.	13	580
Ag. imp. pkgs.	3	75	United States of Colombia.		
Marseilles.			Hdw., pkgs.	127	3,235
Clocks, pkgs.	6	320	Mf. iron, pkgs.	220	1,987
Mf. iron, pkgs.	7	380	Sew. ma., cs.	114	2,186
London.			Wat. closets,	2	94
Mach'y, pkgs.	81	22,792	Pumps, pkgs.	20	384
Clocks, pkgs.	169	3,523	Tinware, cs.	11	553
Hdw., pkgs.	340	8,922	Mf. copper, cs.	11	566
Wringers, cs.	32	350	Br. g'ds., cs.	11	866
Firearms, cs.	2	284	Mf. steel, cs.	65	1,392
Pumps, pkgs.	7	303	Nails, kegs.	174	453
Ox. zinc, bbls.	250	1,881	Furnaces, pkgs.	33	109
Ag. imp. pkgs.	1418	22,734	Windmill,	1	120
Haere.			Ag. imp. pkgs.	27	374
Ag. imp. pkgs.	1027	24,211	Cutlery, pkgs.	23	752
Pumps, pkgs.	7	380	Mach'y, pkgs.	40	2,690
Cop. ore, bags.	768	4,000	Cartridges, cs.	7	121
Firearms, case.	1	27	Clocks, cs.	7	133
Sew. ma., cs.	55	731	Pumps, pkgs.	34	1,407
Hdw., cs.	11	480	Tacks, cs.	17	138
British Guiana.			Nails, cs.	43	329
Clocks, pkgs.	7	60	Iron, pkgs.	27	420
Pumps, pkgs.	65	65	Air guns, case.	1	35
British Australia.			Rifles, cs.	2	451
Hdw., pkgs.	184	15,877	French West Indies.		
Clocks, pkgs.	7	1,651	Gun.	1	18
Rifles, cs.	3	360	Arms, case.	1	5
Pumps, pkgs.	29	1,784	Smyrna.		
Mf. iron, pkgs.	181	3,799	Pumps, pkgs.	7	353
Wire goods, cs.	6	105	Venice.		
Saws, cs.	2	30	Clocks, bxs.	13	1,073
Ag. imp. pkgs.	126	2,943	Sew. ma., cs.	14	274
Wringers, cs.	97	1,550	Nails, kegs.	5	12
Cutlery, case.	1	300	Mf. iron, pkgs.	78	438
S. rollers, cs.	16	235	Hdw., cs.	7	136
Sew. ma., cs.	223	5,811	Cutlery, cs.	3	54
Mach'y, pkgs.	2	483	Lisbon.		
Cartridges, cs.	31	740	Clocks, case.	1	18
Nails, cs.	49	598	Metal goods,	2	195
Axles, cs.	10	177	cs.		
Cot. w'ds. cs.	20	528	Genoa.		
Nails, kegs.	402	1,465	Sew. ma., cs.	45	645
Guns, cs.	6	508	Clocks, cs.	31	543
British West Indies.			Hdw., cs.	12	245
Hdw., pkgs.	18	199	Pumps, pkgs.	3	125
Mf. iron, pkgs.	7	107	Venezuela.		
Pumps, pkgs.	2	33	Mf. iron, pkgs.	370	3,159
Nails, kegs.	113	571	Iron, pkgs.	146	1,322
Nova Scotia.			Steel plates.	74	2,849
Mach'y, pkgs.	16	718	Cartridges, cs.	2	674
Mf. iron, pkgs.	28	28	Tinware, cs.	17	212
Hdw., cs.	16	373	Foundation.	1	460
Cuba.			Pumps, pkgs.	16	265
Mach'y, pkgs.	905	3,935	Clocks, cs.	2	54
Hdw., cs.	170	2,724	Arms, case.	4	196
Clocks, pkgs.	5	253	Sheet brass, cs.	2	53
Water-closets,			Boiler.	1	2,400
Pumps, pkgs.	6	300	Q. sil., flasks.	25	806
Nails, cs.	14	191	Saw fls., cs.	2	105
Nails, kegs.	16	198	Rifles, pkgs.	80	1,285
Cutlery, cs.	33	354	Stoves, bxs.	5	89
Iron, pkgs.	10	31	Sew. ma., cs.	49	964
Wire g'ds.	7	489	Mach'y, pkgs.	504	21,511
Copper bottom	1	250	Cartridges, cs.	23	233
Cartridges, case.	1	42	Cutlery, cs.	11	90
Tin foil, box.	1	2	Ag. imp. pkgs.	1	17
Ag. imp. pkgs.	53	2,368	Hayti.		
Wire g'ds.	53	2,368	Hdw., cs.	12	143
Sew. ma., cs.	45	967	Mach'y, pkgs.	3	40
Tinware, cs.	12	369	Iron, pkgs.	35	219
Tin foil, case.	1	1	Mf. iron, pkgs.	9	764
Metal, case.	2	53	Nails, kegs.	62	106
Bells, bbls.	2	53			

Trade Report.

General Hardware.

The volume of business since our last review has not exhibited any material variation from that of the preceding week. The condition of trade is not regarded as satisfactory, inasmuch as, while a good deal of business is doing in a small way, the prevailing uncertainty resulting from the unsettled condition of the labor market is limiting orders to pressing requirements. Prices remain without much variation, and Hardware is generally held, especially by manufacturers, with firmness. The special features of the market which require mention are referred to below in detail.

NAILS.

The New York market continues dull, with a moderate demand for small lots to cover immediate requirements, but no disposition whatever, in view of the unsettled condition of general business, to replenish stocks. We quote for Iron Nails from store, \$2.20 to \$2.30. Philadelphia reports a quiet market with an increase of business over the previous week, repeating the quotation of \$2.40 for small lots. Chicago is doing a fair amount in small lots, with prices for store lots at \$2.30 to \$2.35, while Pittsburgh, with its mills still idle, is supplied by competing points.

The Cobb Iron and Nail Co., of Aurora, Ind., are offering carlots of Nails at \$2.10 cash, 10 days' draft, f.o.b. Aurora.

BARB WIRE.

The New York market has been quiet and dull, little business being done in other than small lots. In this, as in all the leading markets, there is some uneasiness and a tendency toward making concessions more easily.

The following dispatch from Joliet was printed in one of the daily newspapers this morning:

The Executive Committee of the Barb Wire Manufacturers' Association, or five out of the seven, have met and reduced the price of Barb Wire 25 cents per 100 pounds. Warning was given that the Washburn & Moen Co., would reduce the price so that only such manufacturers as drew their own Plain Wire could sell except at a loss. There are about 50 manufacturers who do not draw their own Wire and 12 who do. It was said the 12 manufacturers could reduce the price so as to crush out the 50 manufacturers of Barb Wire exclusively. With one exception only such manufacturers as are Wire drawers were represented in the meeting. These firms can produce Barb Wire for \$3.05 per 100 pounds by reason of drawing their own Wire. Those who don't cannot produce at a cost of less than \$3.71, because they have to pay \$3.16 for Plain Wire, 40 cents for barbing, and 15 cents for royalty. The market price has been \$3.75. The 12 who draw their own Wire can draw it for \$2.60, which, with a royalty of 15 cents and the expense of barbing—40 cents—makes the total cost \$3.05. A. N. Klinefelter, of Joliet, president of the Executive Committee, who is an exclusive Barb Wire manufacturer, and not a Plain Wire drawer, has sent in a protest against the action of the committee, asserting that the action of the meeting is illegal for want of proper notice. The members of the Executive Committee signing the reduction are H. B. Craig, Chicago, representative of the Washburn & Moen Co.; I. L. Elwood, of Washburn & Moen Mfg. Co. and Elwood & Co., of DeKalb; A. Clifford, of St. Louis; T. Miscash and E. J. Marsh, of Chicago, all Wire drawers but the latter.

In some important points this evidently *ex parte* statement is incorrect. Among others it may be noted that the price of Plain Wire given, while it is the one fixed by the Wire manufacturers, is above the figure at which sales have latterly taken place, there having been a decline in Plain Wire lately.

GERMAN CUTLERY WITH AMERICAN BRANDS. The importation into this country of Cutlery manufactured abroad, and especially in Germany, and so branded as to give the impression that it is of American manufacture, is a matter of so much importance to the manufacturers and the trade at large that efforts, as our readers are aware, are being made to put a stop to it as injurious to the best interest of trade and a fraud upon the consumers. The following is the text of the bill for this purpose which was introduced in the Senate by O. H. Platt, Senator from Connecticut. It is entitled "A Bill to Prevent Frauds on American Manufacturers," and provides:

That no article of foreign manufacture shall be admitted at any custom-house of the United States when such article, or the box or package containing it, is so stamped, marked, branded or labeled as to represent that such article was manufactured in the United States.

Sec. 2.—That this act shall take effect on the first day of July, Anno Domini eighteen hundred and eighty-six.

The Associated Cutlery Manufacturers of the United States have been giving careful attention to this matter, and insisting on the importance of preventing the importation of foreign Cutlery with American brands. From their statement giving the facts in the case, and the reason for the contemplated action, the following extracts are taken and will be of interest to our readers. The names given below will probably convey to some of our readers the intimation that the Cutlery which they are handling under the impression that it is of American manufacture is of really foreign, and perhaps of German, origin:

Before Cutlery was made in this country, English blades were regarded as most excellent and German blades as most miserable in quality. Such is their reputation today. There are about 40 manufacturers of Cutlery of all descriptions in the United States. The business as a whole has never been very profitable, but the goods manufactured have been of such excellent quality as to naturally gain favor with customers, and win reputation for American Cutlery.

German manufacturers and their agents were losing their trade on German goods, and were quick to profit by the growing demand for American Cutlery. They not only stamped and labeled their own goods with American names and devices, but also persuaded large buyers in all sections of the country to have their names or the name of the State or town in which they did business imprinted upon their goods. As a result we have not less than 300 American names in use upon foreign-made Cutlery.

The following are a few specimens from the 300:

NEW ENGLAND CUTLERY CO.
BAY STATE CUTLERY CO.
GRANITE STATE CUTLERY CO.
PENNSYLVANIA CUTLERY CO.
WESTERN CUTLERY CO.
CHICAGO KNIFE CO.
MAINE KNIFE CO.
AMES CUTLERY CO.
FULTON CUTLERY WORKS.
IRVING CUTLERY CO.
EAGLE CUTLERY CO.
CLINTON CUTLERY CO.
MANHATTAN CUTLERY CO.
KNICKERBOCKER CUTLERY CO.
SAINT LAWRENCE CUTLERY CO.
NATIONAL CUTLERY CO.
EAGLETON CUTLERY CO.
DERBY CUTLERY CO.
CHATHAM CUTLERY CO.
YORK CUTLERY CO.
ESSEX CUTLERY CO.
WINDSOR CUTLERY CO.
MOUNT VERNON CUTLERY CO.
SOUTHFIELD CUTLERY CO.
NELSON CUTLERY CO.
EASTON SHEAR CO.
BUCK CUTLERY CO.
WORTHINGTON CUTLERY CO.
HOWARD MFG. CO.

Many of these names are close imitations of genuine American manufacturers' trademarks. German Cutlery was sold in this country before American Cutlery was made. Its German reputation was fast becoming its sepulchre, although sold at a very low price. It appears now almost entirely under American names. The community are led to believe that the 300 counterfeits are genuine, and these foreign manufacturers who killed their own name trade with poor goods are fast destroying the American reputation. The importer pays duty on these American imprinted goods as cheap German goods; they are sold to the consumer as the best American goods. The importers sell the jobbers at a price that destroys the business of the legitimate American manufacturers, as the jobber can sell the goods to the retailer as American goods.

We earnestly urge the passage of Senate Bill No. 245, "To Prevent Frauds on American Manufacturers," as an act of simple justice to ourselves, as well as to manufacturers of other lines of goods. We have made the fight at large cost for American reputation on Cutlery, and just as we were ready to reap some benefits from its acquisition, foreigners who had disgusted the trade with their inferior wares under foreign names send our patterns abroad and have them reproduced under enticing American names, with 10 times the agencies to distribute them, and the advantage of being able to sell them at much less price than we can afford. As the goods are greatly inferior in quality, it is a fraud upon the public, but, in a rapidly increasing and changing population, by continually adding fresh American names, they confuse the consumer, and the task of educating the public as to which is genuine and which is bogus seems to us an endless one, and which would probably entail bankruptcy upon many American companies before it could be accomplished.

During the past three years we have steadily lost trade, and the foreigners have made corresponding gains.

There are other marks upon imported Cutlery which will occur to our readers, and which come very near to being infringements of American manufacturers' trademarks, but which are skillfully changed, so as to avoid, if possible, liability under the trade-mark law. This practice of foreign manufacturers is not, however, confined to Cutlery, but is being extended to other articles, and, unless something is done to prevent, the result will inevitably be that, as fast as Americans establish a better reputation for their goods than foreign goods of the same character possess, bogus marks will be placed upon such goods made abroad, for the purpose of indicating that they are of American manufacture. It will thus readily be seen that the result of this practice will not only be to injure the manufacturers, but also to injure the reputations in which American made goods are held, and so in the end the foreign trade will obtain a large advantage. The people who consume the goods are, of course, misled, as they buy under the impression that they are of home manufacture, and they are injured to the extent in which the goods are of inferior quality to the American goods.

This is a matter to which England a number of years ago felt called to give careful attention, and took legislative action to prevent it. Statutes similar to the one now before Congress have been in existence in England for many years, commencing as far back as 1862, and have been improved by successive enactments, until the law now in force, which was passed in 1883, known as the Revenue act of 1883, makes liable to seizure, among other things, all "articles of foreign manufacture bearing either alone or in conjunction with other

names the words, the name of a part or place in the United Kingdom, which name in the opinion of the Commissioners of Customs, has been placed upon such articles in order to impart to them a special character of British manufacture." Strenuous efforts are now being made in England to enforce this law. So strictly is this law administered in England that goods destined for this country, bearing marks which convey the idea that they are of English manufacture, when passing in transit through England, are seized and destroyed by the custom-house authorities.

MISCELLANEOUS PRICES.

The condition of the Tackle Block market is far from satisfactory to the manufacturers. The American Block Makers' Association have been dissolved, enough of the manufacturers seeing fit to withdraw to make it unadvisable to continue it longer. The principal manufacturers, however, have an understanding among themselves as to the maintenance of prices, and have fixed a limit from which it is not expected they will have to recede. The prevailing prices are referred to as quite unprofitable.

A meeting of the Coffee Mill manufacturers was held last week, and the question as to the course to be pursued in view of outside competition, which has been somewhat disturbing the market, was considered.

The manufacturers of Bright Wire Goods are adhering strictly to the recently established prices, but, as large quantities of the goods were purchased at the low figures recently prevailing, jobbers are enabled to offer them at concessions.

The manufacturers of Stove Hollow-ware have been conferring in regard to prices, and it is probable that advanced quotations will soon be announced.

The revised discount on the Domestic Blind Adjuster, made by the Van Wagoner & Williams Co., 82 Beekman street, New York, is 33 1/2 per cent. instead of 30 per cent., as announced two weeks ago.

The following is the revised price list of the White Mountain Hammock Chairs which are manufactured by the Goodell Co., Antrim, N. H., and for which the Alford & Berkele Co. are agents, 77 Chambers street, New York, which is subject to the general discount of 25 per cent.; terms 60 days or 2 per cent. for cash in 10 days, the goods being f.o.b. New York or factory:

Chairs only, per doz.	Stands only, per doz.	Chairs and stands, per doz.
Oil Frame, Canvas Seat, \$36.67	\$11.67	\$48.34
Painted (Vermillion) Canvas Seat, 43.34	15.00	58.34
White Ash Seated, Brushed Carpet Seat, 70.00	11.67	81.67

The following information in regard to measurements, weights, &c., of the Chair and Stand is given:

	Pounds.
Weight of Chairs	11
Weight of Stands	14
Total	25
Measurement of Chair folded: Length, 52 in.; breadth, 29 1/2 in.; thickness, 4 in.	
Measurement of Chair set up: Height, 52 in.; breadth, 35 in.; depth, 23 in.	
Measurement of Stand: K. D.: Length, 72 in.; breadth, 8 in.; thickness, 8 in.	
Measurement of Stand set up: Height, 72 in.; breadth base, 49 1/2 in.; thickness, 49 1/2 in.	

To prevent misapprehension on the part of the trade we would remind them that Wire Nails in kegs are still sold at the regular list and discount, the only exception being that the Standard Penny Wire Nails are sold at net prices at the ruling card rate.

The Manhattan Hardware Co., Reading, Pa., are expecting to advance their prices about 10 per cent. May 13, and according to their usual custom intimate this in advance.

The advance in Sand and Emery Paper, which we announced last week, cannot be referred to as entirely satisfactory to the trade at large, and its wisdom in some respects is questioned. The advance being about 50 per cent. beyond prices lately ruling, it is considered exorbitant, while the manufacturers justify it as being required, in view of the unprofitable figures at which for some time the Paper has been selling. The trade also view with disfavor the strictness with which the schedule of quantity discounts is to be adhered to, it being understood that each order is to be treated on its own basis, so that the purchaser of a large quantity, entitling him to the specified discount, requiring a little later some additional Paper, is not permitted to have on this subsequent order the same discount, but only the discount which its quantity entitles it to. This treatment, which is so different from what the Hardware trade are accustomed to in the liberal construction that is so often given to quantity discounts, is severely criticised. There are already indications that the high prices will invite competition, and steps are being taken by some new manufacturers to put on the market a line of Sand Paper. The fact that one of the manufacturers—Waddell & Co., 52 Beekman street—is not a party to this arrangement is also referred to as significant.

The Tack market is in a demoralized condition, with much uncertainty as to prices, and no agreement as yet in regard to base discounts. In view of the existing confusion on this point we abandon in our current Hardware quotations the base discounts formerly given, and quote the price of Tacks without reference to any previous discounts. The fact that on the different lines of goods different extras are given renders this the only accurate method of representing the market at the present time.

Stocks and Dies continue irregular, and the lower prices that have been prevailing

give some indications of increasing weakness.

The large manufacturers of Screws are adhering closely to the regular prices, but some of the smaller companies are making concessions, and many of the jobbers who purchased good stocks at low figures are cutting with more or less freedom.

There is no increased disposition to make irregular prices on Wood Planes, the combination rates being generally fairly adhered to by the jobbers, small extras being, however, frequently given. The price of Iron Planes, which is not so regulated, is somewhat more irregular, and extras beyond the regular printed discounts are given with more freedom to careful buyers.

The File market presents no specially new features, but it is feeling to some extent the effect of the falling off in trade, as jobbers who purchased large quantities at low prices are showing a disposition to market the goods at concessions considerably below the quotations that are made by the manufacturers, many of whom are still busy on old contracts.

The following are the prices on Slaters' Tools, Nails, &c., sold by A. Nelson, of the Salem Nail Co., 295 Pearl street, New York, there being a discount of 10 per cent. on Slaters' Tools, and of 25 cents per keg on Galvanized Cut Nails, all others being net:

Slater Roofers' Tools.			
Slater's Hammer	.....	\$3.00	
Slater's Knife or Axe	.....	2.50	
Slater's Ripper	.....	1.75	
Slater's Bench Stake	.....	1.00	
Slater's Roof Stake	.....	.75	
Price per set of 5 Tools	.....	8.50	

Slate and Tin Roofing Nails.			
Inches	.....	1/2 & 3/4	1 & 1 1/2
Black	.....	\$5.00	\$4.50
Tinned	.....	6.75	6.00
Galvanized	.....	6.50	5.75
Inches	.....	1 1/2 & 1 3/4	1 3/4 & 2
Black	.....	\$4.00	\$4.00
Tinned	.....	5.00	5.00
Galvanized	.....	4.75	4.75

They are made Light, Extra Light, Medium and Heavy, with Large and Small Heads.

Copper Slate Nails	.....	\$30.00
Zinc Slate Nails	.....	12.00
Composition or Yellow Metal	.....	13.00
Gas House Slate Nails, Lead	.....	12.00
Galvanized Iron Cornice Nails, per keg, 3 in.	.....	\$4.25
Galvanized Iron Cornice Nails, 2 in.	.....	\$4.00

Common Cut Nails, Galvanized.			
Per keg, 100 pounds.			
10d. to 6d.	.....	6d. & 7d.	4d. & 5d.
.....
.....

Regular extras for Clinch and Finishing Nails.

Common Cut Spikes, Galvanized, \$3.75.

Sheathing Nails, Galvanized.

3 & 3 1/2 in. 2 in.	.....	2 in.
.....

Galvanized Swedes Iron Tacks, 1/2 to 1 1/2 in., 13¢ per pound.

Copper Nails, 3/4 to 6 in., 18¢. Copper Tacks, 1/2 to 1 1/2 in., 10¢.

Barrel Nails.

3/4 & 1 in. 1 in.	.....	1 1/2 in.
.....

Copper, Yellow Metal and Zinc Sheathing Nails and Rods, Galvanized.

Wire Fence Staples, Steel, Galvanized, \$4 per keg.

Malleable Iron Fence Hooks and Staples, \$9 per keg.

Hand Made Wrought Hooks and Staples, \$15 per keg.

ITEMS.

Hussey, Binns & Co., Pittsburgh, Pa., have appointed J. C. McCarty & Co., 97 Chambers street, their sole representatives at New York, who will be authorized at all times to make their bottom prices. It will be observed by their advertisement on page 16 that this agency is announced.

The Silver & Deming Mfg. Co., Salem, Ohio, issue a circular devoted to the "Peerless" Double Acting Force Pump with brass-lined cylinder and brass sand valve seat. They allude to this pump as combining the desirable qualities of the Standard Well force Pump with the special features of a Double-Acting Force Pump. Descriptions of the different styles manufactured are given, with list prices.

We direct the attention of the trade to the important announcement on page 20 by Haydock & Bissell of the sale, May 18 and 19, at their new salesroom, 12 Murray street and 15 Park place, New York, of 3400 cases of Tacks and Nails, by order of the Central Mfg. Co., of Boston. Further particulars, which will be of interest to our readers, are given in the announcement referred to.

The Piqua Handle and Mfg. Co., Piqua, Ohio, for whom Bayles Bros. are agents, 89 Chambers street, New York, issue a list relating to their Braced Steel Garden Rakes, Steel Weeders, Braced Malleable Garden Rakes, and Hay Fork, Rake, Hoe, Long Bent and D Handles.

Some of the trade, especially in the West, experience difficulty in getting Refrigerators and Gasoline Stoves on account of strikes interfering with their manufacture. Many of the contracts for season goods for which the order is taken in advance are subject to the proviso "unless unavoidably prevented."

W. T. Barbee Wire Works, Chicago, Ill., have sent out spring supplement No. 16. Their line includes Lawn Furniture, Stable Fixtures, Lawn Mowers, Wire Fences, Cretings, &c.

The St. Louis Shovel Co., formerly the Groom Shovel Co., St. Louis, Mo., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, have issued a new catalogue, under date March 1, which they are sending out to the customers, together with a circular letter announcing the discontinuance of discount sheets. They intimate that they prefer giving prices and terms by letter. It is also stated that their "St. Louis Shovel Co." (formerly stamped Groom Shovel Co.) and "J. C. Birge" brands of Solid Cast Steel Shovels and Spades are made from imported stock manufactured expressly for the company by Herr Fried

Krupp, Essen, Germany, and in connection with this statement they call attention to the quality of the goods.

The Nason Mfg. Co., 71 Beekman street, New York, are issuing a new illustrated catalogue and price list relating to Wrought and Cast Iron Pipe, Brass and Iron Valves and Fittings, and general supplies for Steam, Gas, Water, Ammonia and Oil, as well as Steam and Gas Fitters' and Plumbers' Tools and Supplies, and Steam-Heating Specialties. It is an attractive, compactly arranged and well-printed volume of nearly 200 pages. It is accompanied by a discount sheet bearing date April 20.

The Auburn Mfg. Co., Auburn, N. Y., for whom J. C. McCarty & Co. are agents, 97 Chambers street, New York, issue a circular relating to their Crescent Corn Knife, in which they give the opinions of some leading jobbers in regard to it.

The firm of Vajen & New, Indianapolis, Ind., has been dissolved by the retirement of Mr. New, Mr. Vajen purchasing his interest in the business. The style of the firm is now Willis C. Vajen.

On May 1 Tower & Lyon, the Union Hardware Co. and the Russia Cement Co. will remove to 95 Chambers street, which runs through to 77 Reade street, and is directly opposite their present location.

George B. Curtiss will remove May 1 from 95 to 96 Chambers street, and Fred B. Burney from 95 to 116 Chambers street.

E. C. Stearns & Co., Syracuse, N. Y., are making a unique and attractive Bronze Paper Knife which is intended for distribution among their larger customers, architects and special friends.

The Penfield Block Co., Lockport, N. Y., have just made important improvements in the shape of the woods and handle of Metal Plug and Lock Faucets, and are giving them what they term a piano finish to further recommend them to the customer.

Thomas H. Marks, Baltimore, Md., issues a circular describing the Alaska Dry-Air Refrigerator, of which nine sizes are made.

Hall & Willis Hardware Co., Kansas City, Mo., issue their spring and summer illustrated catalogue of seasonal goods. It relates to Barb Wire, the Clinton Wire Cloth, Tinner's Stock, Hammock Chairs, Fly Traps, Freezers, Refrigerators, Lemon Squeezers, Ice Tools, Lawn Mowers, Steel and Wood Goods, &c. It represents many specialties, and contains also some standard lists.

M. E. O'Connor, who makes a specialty of Builders' Hardware, removes May 1 to 83 Chambers street.

The American Machine Co., Philadelphia, Pa., issue convenient and attractive catalogues, one relating to their Perfection Scales and another to their Hardware Specialties, such as Fluting Machines, Ice Cream Freezers, &c.

The Wire Goods Co., Worcester, Mass., issue in clear type the revised price list of Steel Wire Nails and Brads, and also publish the card rate of standard Wire Nails, the base prices being, however, left blank. They also call attention to their patent device for hooks with separate washer or heads.

The Union Hardware Co., Torrington, Conn., whose New York office is at 96 Chambers street, call attention to the extent of their wood department and the facilities they possess for doing the Woodwork of manufacturers in Cabinet and Builders' Hardware, Cutlery, Tools, Furniture, &c. They also allude to their facilities for Plating in Gold, Silver, Nickel and Brass, this department of their business being in charge of W. G. Gaston, formerly superintendent of the Winsted Silver Plating Works.

The Eagle Machine Co., Lancaster, Ohio, issue a tasty circular illustrating the Eagle Animal Poke, which is well known in the West, and handled by leading jobbers. Its special feature is that loose keys or pins are dispensed with in attaching the bow to the stall, consisting, as it does, of a pivoted trunnion or key, to which the ends of the bow are connected with a lever, by means of which the trunnion can be turned to any desired position for placing the ends of the bow thereon, and afterward held in position for locking the same in place.

The retail Hardware dealers of Cincinnati, Ohio, have been forming the Hardware Association of Cincinnati, the object of which is to secure the maintenance of prices and render mutual assistance in regard to the matter of credits. The preamble of their constitution is as follows:

Whereas, the condition of the Hardware trade has for some time past been very unsatisfactory and unprofitable, and as in union there is strength, and in co-operation lies success, and as by closer social acquaintance distrusts and prejudice are removed, we the undersigned constitute ourselves into an association, and herewith adopt the following constitution.

Of this association F. H. Willman is president; T. Pickering, of T. & A. Pickering, vice-president; George B. Myer, of Niehaus & Myer, secretary, and W. C. Johnson, of Johnson Bros., treasurer. The directors are J. H. Hartke, of J. H. Hartke & Bros.; A. Rother, of Rother Bros.; and J. H. Greuter, of Greuter & Co.

Wm. Mann, Jr., & Co., Lewistown, Pa., issue a price list of their Hatchets, showing that they make Shingling, Claw, Half and Lathing, of the two brands William Mann and Marshall Bros. They also make Solid

Cast Steel Lathing and All-Steel full polished Shingling and Lath. For these goods they are now taking orders for fall trade, not being prepared to furnish Hatchets at once, but expecting to do so before long.

WHAT THE TRADE SAY.

From Dudley Bros. & Lipscomb, Nashville, Tenn., we have the following review of that market, under date April 24:

We continue to have each week some days of good trade. The high waters and overflows, with all the attendant damage, are not without some compensated good. They enable the lumbermen to float out their logs and rafts on the tributary streams, and as our city is now an important lumber depot we have had an influx of trade the past week from Upper Cumberland people, who are engaged extensively in the lumber business. Collections continue very good except in the cotton districts to the south of here, where they are lagging.

Nails are weaker, and the mills are offering to sell 10 cents per keg less than two weeks ago. Bar Iron remains unchanged. Wire, Plain and Barbed, continues to sell well at former quotations. Finished Steel Shapes, such as Double Shovel Blades, Cultivator Tongues, &c., are selling freely. The fine weather we have recently had has also caused an improvement in the sale of Locks and Builders' Hardware generally, though this class of goods is not selling as it ought at this season of the year. We notice that our Implement houses are already shipping quantities of Harvesting Machines, and the outlook for this class of trade is good. The wheat prospect is first class, but the peach crop is a total failure and the apple crop rather light, so that we will not have so satisfactory a trade on Farmers as in 1885.

A correspondent, referring to the condition of the market, alludes to prices and the outlook generally as follows:

I notice that prices are sustained on Till and Cabinet Locks; that Screws are sold at the new list with slight concessions; that Plain Annealed Wire still continues to be quoted at 72½ per cent. discount; that Nails at Cleveland, in store, sell in small lots, Iron \$2.25, Steel \$2.50 rates. From reports I should judge building is getting a black eye all over the country. Contractors are unwilling to take contracts, not knowing what wages workmen may demand any day. Traveling men complain of dullness the country round, and from present appearances there is little encouragement for hoping for anything generally.

A correspondent in Illinois writes as follows in regard to topics alluded to by some of the trade in a recent issue:

We agree with "Pennsylvania" as regard charges for boxing and carting made by jobbers, but it would be an easy matter for jobbers to add the same amount on the goods bought, and the average Hardwareman would not know it! We can also sympathize with your correspondent regarding jobbers who sell to merchants not Hardwaremen. This I think a greater evil than charging for boxing. We know of two jobbers in Chicago and one in St. Louis who regularly send their catalogues and discount sheets of Guns, Rifles, Sporting Goods, &c., to a drug store, a cigar store and a confectioner in our city. The latter will order anything on the list for any of their friends at nearly cost, thus depriving the Hardware trade of what should be theirs and reducing profits on that class of goods. We Hardwaremen should put all such jobbers "on the list." They never would be missed, except by merchants who delight in interfering with other people's business.

This practice is undoubtedly exceedingly annoying, and if the trade would take hold of the matter energetically something might be done to stop it. The publication of the names of houses that resort to these methods might be a severe, but perhaps an effectual, method of treatment.

ASSOCIATION OF BRASS MANUFACTURERS.

Following is a list of the firms comprising the Manufacturers' Association of Brass and Iron, Steam, Gas and Water Work, the organization of which was noticed in our issue of March 25. The ostensible object in the formation of this association was the establishment of a uniform price list to which all the manufacturers in the country would adhere. It has since transpired that the more important purpose of the organization was to form a protective league for dealing with all labor troubles. It has already been the means of adjusting the difficulties between Peck Bros. & Co. and their workmen, and promises to accomplish equally good results in future troubles of this nature. The association has also adopted a plan for insuring its members against losses occasioned by boycotts. The list printed below is said to comprise over 98 per cent. of the manufacturers of this country, estimated on a basis of the total productive capacity of all the works:

WILSON, SNYDER & Co., Pittsburgh, Pa.
BAILEY, FARRELL & Co., "
MANSFIELD & Co., "
ROBERT LEITCH & Sons, Washington, D. C.
THOS. SOMMERVILLE & Sons, "
HENRY McSHANE & Co., Baltimore, Md.
WRIGHT & COLWELL, "
McNAB & HARLIN, Mfg. Co., "
THE UNITED STATES BRASS CO., "
EATON, COLE & BURNHAM CO., "
T. R. McMANN & BRO., "
KELLY & JONES CO., "
MAYOR, LANE & Co., "
CHAS. HARRISON & Co., "
HAYDENVILLE MFG. CO., Haydenville, Mass.
E. STEBBINS MFG. CO., Springfield, Mass.
WALWORTH MFG. CO., Boston.
HAXTON STEAM HEATING CO., Kewanee, Ill.
CHAS. PERKINS, Philadelphia.
McCAMBERIDGE & Co., Philadelphia.
H. BELFIELD & Co., Philadelphia.
HOFFMAN & BILLINGS MFG. CO., Milwaukee, Wis.
RUNDLE, SPENCE & Co., Milwaukee.
THOMAS & WENTWORTH MFG. CO., Milwaukee.
L. WOLFF MFG. CO., Chicago, Ill.

CRANE BROS. MFG. CO., Chicago.
LEHNER, JOHNSON, HOYER & Co., Chicago.
CHAS. WHITTAKER MFG. CO., Chicago.
PECK BROS. & Co., New Haven, Conn.
N. O. NELSON MFG. CO., St. Louis, Mo.
WESTERN BRASS MFG. CO., "
JAMES JONES, "
KUPFERLE & BOISSELIER, "
ROBERT KIRKUP & Co., Cincinnati, Ohio.
WM. KIRKUP & SON, "
WM. POWELL & Co., "
FARNAN'S BRASS WORKS, Cleveland, Ohio.
WORSWICK MFG. CO., "
H. C. MONTGOMERY & Co., "
ROUSE & HILLS, "
SHAW, KENDALL & Co., Toledo, Ohio.
JARECKI MFG. CO., Erie, Pa.
BELKNAP MFG. CO., Bridgeport, Conn.
DUBUQUE BRASS & METAL CO., Dubuque, Iowa.

ARRANGEMENT OF HARDWARE STORES.

We are indebted to W. W. Pierce & Co., Erie, Pa., for the following very satisfactory description of their store, in which important general principles of arrangement are alluded to, with specific suggestions in regard to their methods of handling certain lines of goods:

In submitting the following arrangement of a retail Hardware store, doing business in a small town, amid great competition, the authors feel keenly their inability to do full justice to the subject. It has been their aim throughout a moderately successful business career to make their store attractive to buyers, as well as to condense the internal plan so as to effect the greatest saving in the employees' time. To gain this end it has been their custom to place goods used in the same branches of work together. Thus, a carpenter coming into the store to purchase goods in his line need not stir from the counter on which his goods are displayed, and can there select all that he may want within a space of 10 feet from a Plane to a Screw. This same order is observed throughout the store, and is found to work admirably. The store occupied consists of three stories and a basement, being 24 x 100 feet, having a skylight in the roof lighting the center of the building down to the basement, each floor being supplied with heavy glass areas for this purpose. The height of the basement is 8 feet, and first floor 16½ feet, having a gallery 8 feet from the lower floor and 8 feet from the ceiling. The second floor is of the same height as the first and is supplied with a similar gallery. The third floor is 12 feet high and does not contain a gallery, as do the lower floors. The galleries referred to are such as are sometimes seen in retail stores skirting along the wall, and being intended to more easily reach the goods on the higher shelves. The one referred to is 4½ feet wide, and is surrounded by an iron railing 24 inches high. It has been found a great inconvenience by the authors to have but one place of crossing to and from the sides of the galleries, and to overcome this a crossing built in regular bridge form has been placed toward the rear of the store and is considered a great improvement, as it saves time in running back and forth to the front or rear of the store, as the case may be, to cross over from one side to the other. The basement of the building has a full glass front, with a door in the center, giving easy access to the coal bins under the pavement. It is lighted at both ends in addition to the center area by windows protected by grating, which gives abundant light. It is also supplied with an excellent Portland cement floor.

The first floor of our store is arranged in this way: The front or display windows are of plate glass, the bottom of the glass being 22 inches above the sidewalk. There is a wide base shelf inside the windows, 19 inches from the floor and 30 inches deep. The door is flush with the front, giving a far better view of the interior than could otherwise be obtained. It has been the general plan in erecting store buildings to set the front doors further back in the building than the windows. This the authors do not countenance, fully believing that an attractive interior draws purchasers fully as well as an elegant window display. This cannot be secured with a receding doorway, as the reflected lights from the side windows blind the eye, rendering it impossible to secure a good view of the interior. On the right side as you enter the store we have placed a glass side case resting on a base 20 inches high. This case has a full glass-door front and extends to the gallery above, a distance of 6 feet. It is 16 inches deep and 12 feet long, in which is displayed a sample of every Carpenter's Tool kept in the store, including Chisels, Gouges, Bits, &c. Beyond this casing, on the right-hand side, is shelving with boxes in which are kept the Table Cutlery. These boxes are 11 inches high, 3 inches wide and 9 inches deep, with samples of Knives and Forks on the front, so that there is no hesitancy in at once picking out the kind wanted. These boxes will each hold two dozen Knives and Forks, which supply is considered amply large enough to retail from. We have next to the glass case at the front, and under the shelving just referred to, a base 48 feet long and 26 inches deep, extending back toward the rear of the store. In this base are large-sized drawers, of the full depth of the base, and labeled with the names of the articles they contain. On the top of this base and directly back of the Cutlery-ware are boxes, painted a light green, extending to the gallery above and being labeled with their contents, no box containing more than one different kind of article. These boxes contain all our miscellaneous small Hardware, and the boxes are therefore small, in order to keep them separate. Immediately back of this comes a base of the same height as the one referred to above, but 40 inches deep, which extends to the rear of the store. This base was made of the above extraordinary width for the purpose of accommodating our extensive Screw Case, of which a cut, Fig. 73, is annexed to more thoroughly illustrate the idea. It will be seen at a glance that the rear of the Case is made deeper than the front. The depth in front is 4 inches and in the rear 6 inches, both outside measurement. The front boxes are 4 x 4½ x 3 inches deep, and the rear boxes 4 x 4½ x 4½ inches deep, inside measurement. It will thus be seen that the boxes are the same size except in depth. The

deeper boxes are intended for the larger-sized Screws, it having been found unsightly to make the boxes at the back of greater width than those at the front. Therefore the increased depth. In this case there are 240 boxes, each containing a different size, the contents of each box being plainly marked on the lid and extending from No. 10 to No. 4—20, the sizes running along in regular rotation. We consider this case decidedly the best thing ever gotten up in the way of a Screw Case, and all who have seen it are unanimously of the same opinion. Each box is large enough to hold a gross package, a large enough amount to

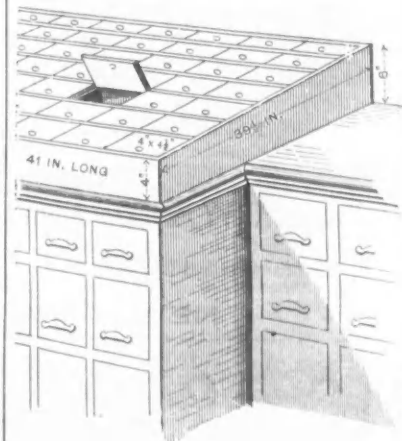


Fig. 73.—Screw Case.

supply any retail demand. Above this Screw Case, the position and general arrangement of which is shown in Fig. 74, is kept our entire stock of Screws in original packages of 10 gross each. We do not retail from these packages, except in gross lots. All small lots are sold from the case. Beyond the Screws is shelving running rearward to the shipping-room, on which are kept our Carriage, Tire and Machine Bolts in tin boxes, each box marked on the outside. On the remaining space on these shelves not taken up by the boxes is kept our stock of Locks, Knobs, Butts, &c. All the shelving on this side of the store is 20 inches wide, and the whole, excepting that part occupied by the tin boxes just referred to, is divided off for the small drawers containing the above mentioned stock. Nothing is exposed to gather dust and make the store look dingy. The stock is always clean and free from dust and dirt. At the front of the store and on the left hand is a large glass side case 6 feet high, and 25 feet long by 34 inches deep, arranged into steps to show the Silverware contained therein to the best advantage. The case rests on a base 24 inches high, in which are large drawers marked with their contents. From this case extends shelving similar to that on the opposite side, 44 feet long, 6 feet high and 20 inches deep, on which is kept Tinned and Granite Ware, displaying a sample of every article of this kind kept in the store. Under these shelves is a base 18 inches high and 36 inches deep extending to the office at rear of the store. This base is divided off into drawers containing Twines, Cordage, Sash Cord, &c., each drawer being labeled, as are all others. It has been found inadvisable to put a counter on both sides of the store. We have therefore set ours on the left-hand side as you enter. It is of plate glass, consisting of three sections each 14 feet long. The first section rests on a black-walnut table, and contains solid Silverware attractively displayed. The second section contains ware of the same kind, but is set on a counter divided off into boxes under the case. We have subdivided these boxes into two sections by a partition running lengthwise of

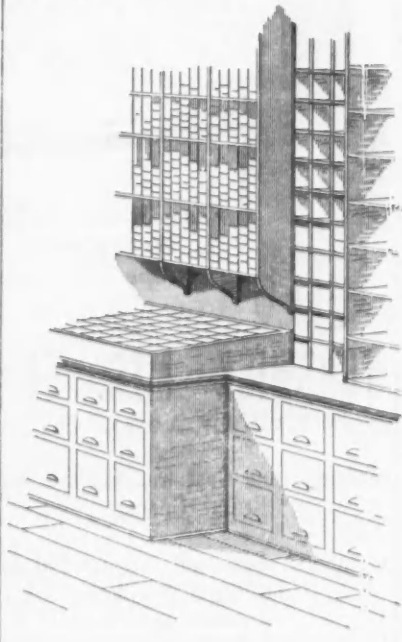


Fig. 74.—Arrangement of Ledge, Screw Case and Shelving.

the counter, and thus obtain double room, marking each compartment, inside and outside the counter, with the name of the goods contained. The third section of the show-case rests on a counter divided off in the same manner as that under the second. This third case contains our stock of Pocket Cutlery, Shears, Scissors, &c. Still further to the rear, and immediately adjoining the third case, is the wrapping counter, under which are the Nail bins. These bins are of exactly the same pattern as the double bins described in your issue of November 19. On the right-hand side of the store is displayed our line of Stoves, extending back to the shipping-room, all neatly kept and

arranged in the order of their sizes, each mounted on movable trucks. It will be easily seen by the above arrangement that a purchaser need not move from the first floor, and, although we have a gallery there, it is seldom used by any one except employees. On the shelves surrounding the gallery is our stock of Shelf Hardware in original packages, and this stock is only drawn from as the broken lots below begin to run short. The stock about the gallery is so arranged that its exact condition can be seen from below without going up for a closer inspection. On the gallery are our Wire Cloth boxes, arranged as per cut, Fig. 75. It has always been a cause of annoyance to dealers handling Wire Cloth to have it unroll and loosen up as soon as the original fastenings are broken. To overcome this we have hung the Cloth in a box, as will be seen, by means of a stick passed through the center. The sides of the box are slotted, as shown, and a bearing stick—a sawed-off fork handle—is inserted. This round stick bears up against the Cloth, being held snug by a spiral spring, hooked over each end and extending to the axis stick of the roll. This arrangement entirely overcomes the loosening of the roll and makes the Cloth much nicer to handle. The boxes are placed in a tier one above another. On the floor in front is a 3 foot rule, made by driving brass-headed tacks into the floor, so that in cutting off it is not necessary to use a pocket rule or yard stick. The edge of the Cloth is always true, being cut level with the box. Our arrangement for spooling Copper Wire is also worthy of notice, as will be seen by the accompanying cut, Fig. 76. The Wire is wound on each side of this board as soon as it comes in, the board at the same time being marked with the size wound on. By using this scheme the Wire never gets tangled or "kinky" in weighing off. The board is about 15 inches long by 8½ inches wide.

On the second floor of the building we keep our stock of Stoves and Ranges, and on the second-floor gallery is kept our stock of Forks, Rakes, Hoes and all kinds of small Farm Hardware. On this floor, near the Stoves, in racks made for the purpose, is our stock of Rubber Belting, and on a table near by is kept the stock of Rubber Packing. The third floor is devoted exclusively to the manufacture of Tinware and the doing of a general repairing business.

The office is in the rear left-hand corner. It is surrounded by a black-walnut partition of the usual height, surmounted by a wire railing or screen, through which holes are cut for the transaction of business. The office interior is gotten up in much the same shape as the store, and the same order is

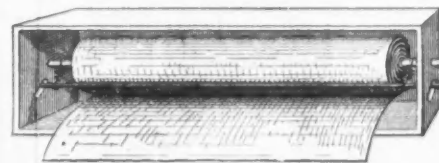


Fig. 75.—Wire-Cloth Box.

observed throughout. Stationery and blanks of all kinds used in the business are kept in separate drawers and labeled. There is also a private office off from the general office, fitted up for the head of the firm, furnished with desk, table, fireplace, &c. Our shipping-room at the back of the store is considered a model of convenience. In it is placed an elevator run by water-power, having a 6 foot platform, and access to the building is secured by a stairway running directly out of the room to the several floors. It was considered better by the authors to have the stairway leading to the upper floors start from the shipping-room, being isolated from the salesroom. This does away with the drafts of cold air to which the store is constantly subjected when the stairway ends in the salesroom.

It is to be hoped that some attention will be paid to the arrangement of our store. The whole idea followed out in the planning has been to combine attractiveness and con-



Fig. 76.—Copper-Wire Board.

venience, and, while we see many places where one of these good points could be bettered, it would only be at the expense of the other to do so. We believe we have secured the best possible combination of these good qualities, together with the greatest economy of space.

The following description of an Axe Rack comes to us from St. Louis, and will be of interest to our readers as describing an arrangement for handling Axes which, while used to some extent in certain parts of the country, is entirely unknown in others and will doubtless be new to many of our readers. Our correspondent's description of it is follows:

As an old Hardwareman and traveler, allow me to give you a drawing, Fig. 77, of a Rack for holding Chopping Axes and displaying them in a retail store. As you are now asking the trade to give you points as to the best arrangement of Hardware, I take pleasure in giving this as the best way to show Axes. It will be seen that the different patterns and makes can be exhibited

without trouble or handling. When a buyer wishes an Axe of any style displayed on a stand, he can point it out to the merchant, and any desired weight can be selected, without the buyer handling other goods in the store, as usually is done. Only one side of the stand is generally used for displaying Axes, but where the stand can be placed in position on the counter both sides can be used to advantage. The ends are closed with solid boards, and a Double Bit Axe fastened up with wire makes a good appearance. If a Double Bit Axe is to be so displayed, the side boards ought to be covered with black velvet or any covering used on the front of the stand, and if both sides are used they should be finished alike. The stand can be made to hold less than 12 Axes as shown in the cut, if desired, and where Double Bit Axes are also kept for sale the stand can be made higher for such Axes, which can then be placed with the Single Bit Axes. The pieces of wood on which the Axes stand have a small groove or cut-out, so as to take the bit of the Axe and prevent



Fig. 77.—Axe Rack.

it from falling. The Rack is 27 inches long, the inclined sides 33 inches long and their distance apart at the base 30 inches. Any one can make the stand out of old packing boxes at a trifling cost. It helps the sale of Axes and will be appreciated by the trade. In Missouri it is in general use among retailers and has found growing favor on account of its many advantages.

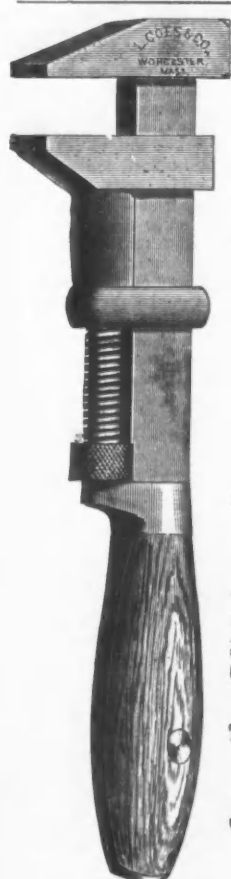
HARDWARE CHARLIE.

Some of our correspondents have from time to time alluded to the fact that most of the articles which we have published relating to the arrangement of Hardware stores have referred to the larger houses, in which business is carried on on a more extensive scale than in many of the villages and towns throughout the country. We have in hand at this writing a letter from a Hardware house in Illinois, who make the point that those who have contributed to the discussion thus far have in most cases stores which are twice the size of theirs, and that therefore their suggestions are not of as much service as if they related to the arrangement in a more limited business. Our correspondent's store is 22 x 60 feet, and is doubtless a representative store, such as many of the trade possess. It is not unlikely that many of our readers have found difficulty in applying some of the plans, for the reason that they are designed for the larger and more extensive establishments. We direct the attention of our readers to this matter, that we may earnestly request them to furnish suggestions which will be of service to the smaller retail trade, doing a business of perhaps \$5000 to \$15,000 a year. Such suggestions cannot very well be furnished by the larger houses, but must be given by the merchants of this class. We therefore invite contributions from all such, with descriptions of plans that they adopt or approve for the convenient and compact arrangement of goods in crowded stores, or of any special methods which they find desirable for the display and accommodation of goods in comparatively small stores, where, after all, the bulk of the trade is done. At the same time we would remind all Hardwaremen that many of the suggestions which are given, while they cannot in all cases be closely followed, will doubtless be of service as describing methods which, with a little ingenuity, may be adapted to smaller or to larger stocks, as the case may be.

A correspondent writes us that he would like to hear from some party who has a first-class way of handling Belting, and also of displaying Axes. We shall be glad to hear from the trade in regard to these matters. Some of our readers will be able to suggest other methods of showing Axes besides that described above.

A Western Hardwareman advises that he has discarded the use of boxes for Hardware, and in their place has adopted the method of shelving with wooden lids, on the outside of which samples are fastened, as described in our issue of November 12. He likes the new plan much better. He also describes a Screw Case he has recently made, and of which he speaks as handy and inexpensive. It is made from a Clark's spool case. He removed the drawers from the case and put in their stead six rows of boxes, each row containing seven boxes, thus making 42 in all. The boxes are made of pasteboard, and are 3¼ inches high, 3½ inches wide and are 6½ inches long. The boxes could, if desired, be made longer, but the size above described is sufficient for the requirements of our correspondent's trade.

Among the articles made by the Udell Wooden Ware Works, Indianapolis, Ind., is the Udell Rope Reel, which is intended for the convenience of merchants retailing Rope.



L. COES'
GENUINE IMPROVED
Knife Handle
PATENT

Screw Wrenches

MANUFACTURED BY
L. COES & CO.,
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ESTABLISHED IN 1839.

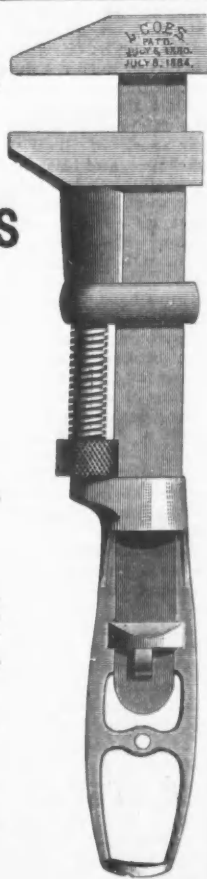
Patented July 6, 1880. Patented July 8, 1884.



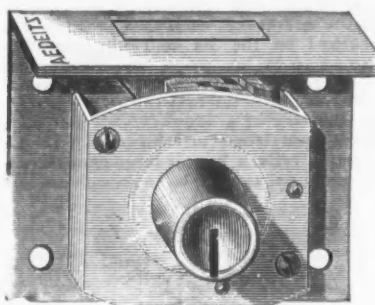
Sectional view illustrates our NEW KNIFE HANDLE, showing Malleable Iron Frame and Shank of Bar keyed into position.
Straight Bar, Extra LONG NUT FOR SCREW IN JAW.

The Best Made and Strongest Wrench in the Market.
Send for Illustrated Price List and Circular.

J. C. McCARTY & CO.,
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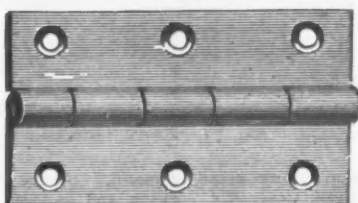


No. 51 Lock.

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BRASS, GALVANIZED & SHIP CHANDLERY
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ALWAYS GIVES THE
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Main Belting Co.

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Strength, Durability and

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Straight, Even Through-

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No Cross Joints, Un-

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Clings well to the Pulley.

Has no equal. In fact,

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Pipe Size.

SEND FOR PRICES.

WORSWICK MFG. CO.,
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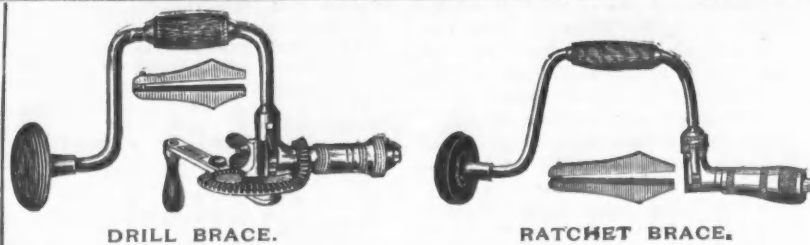
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For the year to come we will make still better goods, sell them at a reasonable price, and trust that our friends, the Dealers, will put them within the reach of all who want them at such prices.

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Forged Horse Nails.

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HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
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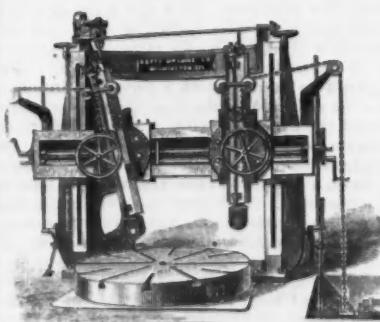
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We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 58,868 pounds to the sectional square inch, and an average reduction of area of the fractured section of 30% per centum. Our prices are as low as the production of a good article will admit of.



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Improved Machine Tools.

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Sizes up to 14 feet Swing.

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A POWERFUL MACHINE.

SIMPLE,

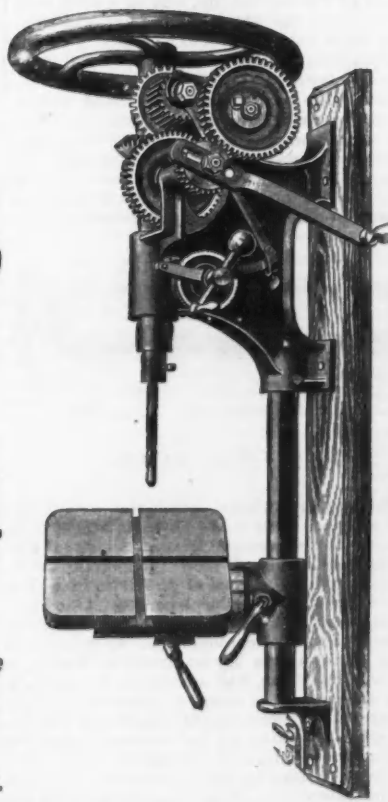
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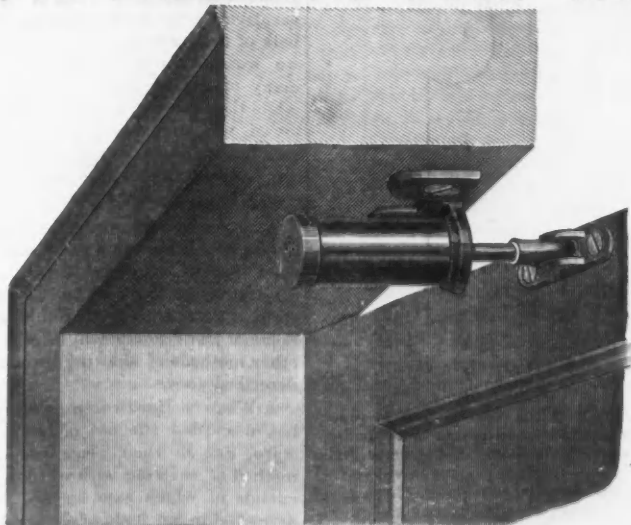
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It can be applied to either side of the Door or on the casing overhead. In fact, the only universal Air Door Check made that can be sold over the counter, not requiring an expert to put it on. Can be applied by anybody, and are sold at a less price than other Checks. Catalogues and Price Lists furnished on application.

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Melting, Reading, No. 1, 1885, \$10.00 per ton, 100 lbs. net.
Melting, P. S. & W., No. 1, 1885, \$10.00 per ton, 100 lbs. net.
Melting, Warner's, No. 1, 1885, \$10.00 per ton, 100 lbs. net.
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Established 1863. Incorporated 1881. THE
Largest Manufacturers
IN THE WORLD OF
Nickel Anodes,
Nickel Salts,
Patent Muslin Buffs,
Polishing Lathes,
Polishing Felt,
Polishing Rouges,
Pol'ng Compositions,
Walrus Leather,
Wood Emery Wheels,
Platers' Brushes,
&c., &c., &c.

**THE AMERICAN
DYNAMO ELECTRO-PLATING
MACHINE.**
Best Plating Machine
in the Market.
HEADQUARTERS FOR
EVERYTHING
IN THE PLATING AND
POLISHING LINE.

Zucker & Levett Chemical Co., 538 to 564 W. 16th St., 36 to 40 11th Ave., NEW YORK, U.S.A.

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ing to accept in the present disturbed condition of the labor market. It is even suspected that the demand for Coal is not altogether natural, as rumors of a possible strike among miners throughout the Anthracite region have gained wide currency, and consumers may wish to secure themselves beyond contingency. As to a strike, the Coal companies have no definite information; in any case, contracting parties are released under the usual terms of agreement where the circumstances such as here contemplated make delivery impossible. Aside from stove sizes, such as Lump and Pea, the market is dull. We quote: Broken and Egg, \$3.15; Stove, \$3.50; Nut, \$3; Pea, \$1.75 @ \$1.85—all White Ash, either hard or free-burning. Special Coals, as usual, are sold at higher figures.

Imports.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending April 28, 1886:

Hardware.
Bailey Wiring Co.
Machines, cs., 2
Boker Hermann & Co.
Hardware, cutlery
and guns, pikes, 62
Drexel Morgan & Co.
Arms, cs., 15
Cases, 20
Field Alfred & Co.
Cutlery, cs., 4
Packages, 5
Anvils, 35
Cases, 2
Gerdan Otto
Bundles, 492
Goffrey Chas.
Mds., cs., 3
Gurney F. B.
Case, 1
Hartley & Graham,
Mds., cs., 18
Hoadley J. C.
Case, 1
Johnson John & Co.
Mach'y, pks., 5 ;
pcs., 6
Lainz & Burman,
Machinery, case, 1
Laur C. F.
Case, 1
Lloyd & Magnus,
Cases, 1
Markt & Co.
Cases, 19
McLaughlin's Sons J.
Mach'y, cs., 12
Newell & Shipman,
Files, cks., 2
Rosenthal J. & Co.
Pks., 10
Stone & Downer,
Mach'y, cs., 2
Smith & Fudge,
Cutlery, cs., 3
Sellers W. B.
Cutlery, cs., 2
Sanderson & Son,
Broken axes, box, 1
Spelman W. B.
Case, 1
Schovering, Daly &
Gales,
Guns, cs., 2
Cases, 5
Schulze & Ruckgaler,

Order,
Pig, tons, 1925
Spiegelstons, tons, 900
Rods, bdls, 5772
Wire, pks., 266
Wire, cs., pks., 2095
Rings, 36
Tubes, 39
Spiegel, cks., 78

Steel.
Baldwin A. & Co.
Angles, 301
Plates, 172
Belcher Henry W.
Bdls., 11
Pkg's., 4
Boker Carl F.
Packages, 6
Billets, cs., 25
Sheets, cs., 36
Slabs, 233
Merch. Desp. Co.
Steelwares, cs., 2
Newton & Shipman,
Bundles, 41
Bars, 22
Cases, 9
Perkins C. L.
Rail ends, tons, 150
Pilditch F. S.
Packages, 128
Sheldou G. W. & Co.
Cases, 3
Bundles, 95
Wagner W. F.
Cases, 5
Plates, 28
Bars, 67
Bundles, 148
Order,
Rods, bdls., 9361
Blooms, 2480
Tires, 130
Billets, 2471
Old leaf spring,
tons, 50
Bars, 1677
Shas., 1
Forgings, 38
Rings, 58
Packages, 16
Scraps, cks., 68
Cases, 18
Crunk-shaft, 1
Bundles, 30

Gun barrels, 17
Stitch & Balke,
Cases, 12
Sutro Bros.
Machinery, part, 1
Taylor Thos.
Cases, 24
Wallach Willy.
Cases, 5
Wiebusch & Hilger,
Anvils, 226
Fig. 24
Witte John G. & Bro.
Cutlery, cas., 16
Wolf H. & Co.
Case, 1 *Order
Machines, cs., 12
Mach'y, pkgs., 14
Pkgs. for Fort Li-
m., 137
Cases, 4

Iron.
Begg J. & Co.
Boat, 1
Baring Bros. & Co.
Bars, 10,552
Bldg. coils, coils, 771
Rods, bdls., 4041
Ore, tons, 296
Ore, kg., 587,000
Bdls., 8101
Brooklyn Iron & Co.
Wire netg., rolls, 504
Bureau of Ordnance,
Tel. cable drum, 1
Coddington T. B. & Co.
Sheds, pkgs., 881
Crocker Bros.
Ferro. iron, lots,
Spiegel iron, tons, 150
Henderson
Fig. tons, 250
Lillienberg N.
Fig. pcs., 10,122
Lough G. & Co.
Old iron, cs., 24
Mason J. W. & Co.
Wire rope, pkgs., 3
McLaughlin's Sons, J.
Crutings, 4
Cylinders, 13
Naylor & Co.
Spiegel, tons, 130
Nail rods, bdls., 320
River rods, cas., 790
Perkins C. L.
Spiegel, tons, 850
Plock & Co.
Bldg., 6219
Cases, 2634
Bdls., 1128
Stetson Geo. W. & Co.
Fig. tons, 10
Upton & Walton & Co.
Wire rope, coils, 2

Metals
Brown Bros. & Co.
Tin plates, bxs., 500
Baring Bros. & Co.
Zinc oxide, bdls., 50
Bonstead & Co.
Tin slabs, 210
Bruce & Cook,
Tin plates, bxs., 2554
Byrne J. & Son,
Tin plates, bxs., 1075
Dickerson, Van Dusen
& Co.
Tin plates, bxs., 1238
Downing R. F. & Co.
Tin plates, bxs., 116
DeMitt H. R. & Co.
Tin plates, bxs., 1100
Fuller, Dana & Fitz,
Tin plates, bxs., 700
Graef Cutlery Co.
Cases, 4
Graef & Schmidt,
Metal ware, cs.,
Hartley & Graham,
rer. caps, cs., 4
Hartley & Graham,
rer. caps, cs., 2
Lough G. F. & Co.
Old metals, bdls., 12
Lyon & Healey,
Case, 1
Merrill S. S. & Co.
Tin plate, bxs., 255
Morton, Bliss & Co.
Tinfoil, pkgs., 6
Naylor & Co.
Tin, slabs, 525
Phelps, Dodge & Co.
Tin plates, bxs., 17-
92
Antimony, cs., 50
Shepard, Sidney & Co.
Tin plates, cs., 2134
Siegmam Ed.
Metal ware, cs., 4
Steglich & Baese,
Metal ware, cs., 6
Wheeler, Fellows &
Sparks,
Tin plates, bxs., 721
Zinsser Wm.
Lead caps, cs., 3
Order,
Copper, cas., 1
Tin plates, bxs., 43-
925
Lead, pkgs., 3205
Quicksilver, bottles,
50
Tin, ingots, 1487
Tin, slabs, 6854
Antimony, cs., 150
Pittsburg, bars, 320
Tin plates and tag-
gers, bxs., 1581

The imports at this port of Cutlery, Hardware and Metals for the week ending April 23 were as follows :

	Quantity.	Value.
Brass goods.....	36	\$2,872
Bronzes.....	20	1,101
Chains and anchors.....	13	1,145

Clocks.....	83	2,378
Copper.....		54,691
Cutlery.....	112	34,108
Dutch metal....	5	629
Guns.....	22	4,956

Hardware	20	3,143
Iron, pig, tons	1,272	18,020
Iron, sheet, tons	21	1,490
Iron, spiegel, tons	1,780	28,247

Iron, other, tons.....	1,601	80,133
Lead, pigs.....	794	3,208
Machinery.....	89	3,889
Metal goods.....	400	40,065
Nails.....	2	261

Needles.....	26	9,048
Nickel.....	26	9,665
Old metal.....		99
Platina.....	2	7,003
Permutation caps.....	8	611

Pins.....	39	4,320
Quicksilver.....	800	91,890
Regulus antimony.....	215	10,442
Saddlery.....	28	2,480
Steel.....	81,755	88,979
Tin, bxs.....	8,298	38,812
Tin, 6,097 slabs; 560,264 lb.....		123,578
Wire.....	1,152	5,791

1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 26

WHOLESALE METAL PRICES, April 28, 1886.

METALS.

IRON.—Duty: Bars, 8-10¢ to 11-10¢ per lb.; provided that no bar iron shall pay a less rate of duty than 35¢. Sheet, 11-10¢ to 12-10¢ per lb. Band, Hoop and Scrolled, 1¢ to 1 1/4-10¢ per lb. Railroad Bars weighing more than 25 lb. per yard, 7-10¢ per lb.

Standard American Pig Iron.
Foundry No. 1, 1 ton 18.00 @ 18.50
Foundry No. 2, 1 ton 17.00 @ 17.50
Gray Foundry, 1 ton 16.00 @ 16.50

No. 1 Scotch Pig Iron.
Carnbroe, 1 ton 20.00 @ 20.50
Coltess, 1 ton 20.00 @ 20.50
Shotts, 1 ton 19.50 @ 20.00
Hengarock, 1 ton 20.00 @ 20.50
Gartebarr, 1 ton 20.00 @ 20.50
Langmuir, 1 ton 20.00 @ 20.50
Summerlee, 1 ton 19.50 @ 20.00
Dumfries, 1 ton 19.00 @ 19.50
Eglinton, 1 ton 18.50 @ 19.00
Clyde, 1 ton 18.00 @ 18.50

Steel, at Eastern mills. 1 ton 34.50 @ 35.00
O'Neil's, 1 ton 30.00 @ 30.50

Scrap.
Wrought, 1 ton, from yard, \$19.75 @ 20.00

Bar Iron from Store.
Common iron, 1/2 to 1 in. round and square, 1 lb 1.75 @ 1.80¢
Refined iron, 1/2 to 1 in. round and square, 1 lb 1.90 @ 2.00¢

Sheet Iron from Store.
Common, 1/2 to 1 in. round and square, 1 lb 1.90 @ 2.00¢
Refined, 1/2 to 1 in. round and square, 1 lb 2.00 @ 2.10¢
Rods, 1/2 to 1 in. round and square, 1 lb 2.10 @ 2.20¢
Bands, 1/2 to 1 in. round and square, 1 lb 2.20 @ 2.30¢
Burden's "Best" Iron, base price, 1 lb 2.30¢
Burden's "H. B. & S." Iron, base price, 1 lb 2.40¢
Norway Nail Rods, 1 lb 2.50¢

Galvanized Sheet Iron from Store.
Common, 1/2 to 1 in. round and square, 1 lb 2.70 @ 2.80¢
Refined, 1/2 to 1 in. round and square, 1 lb 2.80 @ 2.90¢
Rods, 1/2 to 1 in. round and square, 1 lb 2.90 @ 3.00¢
Bands, 1/2 to 1 in. round and square, 1 lb 3.00 @ 3.10¢
Burden's "Best" Iron, base price, 1 lb 3.10¢
Burden's "H. B. & S." Iron, base price, 1 lb 3.20¢
Norway Nail Rods, 1 lb 3.30¢

Galvanized Sheet Iron from Store.
Common, 1/2 to 1 in. round and square, 1 lb 2.70 @ 2.80¢
Refined, 1/2 to 1 in. round and square, 1 lb 2.80 @ 2.90¢
Rods, 1/2 to 1 in. round and square, 1 lb 2.90 @ 3.00¢
Bands, 1/2 to 1 in. round and square, 1 lb 3.00 @ 3.10¢
Burden's "Best" Iron, base price, 1 lb 3.10¢
Burden's "H. B. & S." Iron, base price, 1 lb 3.20¢
Norway Nail Rods, 1 lb 3.30¢

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb. or less, 45¢ ad. val.; valued above 4¢ and not above 7¢ per lb., 2¢ ad. val.; valued above 7¢ and not above 10¢ per lb., 3¢ ad. val.; valued above 10¢ per lb., 3 1/2¢ ad. val. Extra—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1 1/2¢ per lb. in addition to above; Steel Circular Saw Plates, 1¢ per lb. in addition to the above.

American Cast Steel.
For American Steel, see Pittsburgh quotations.

Chrome Steel.
Too Steel, ordinary sizes, 1/2 to 3 inches, 10 @ 14¢
Admiralty Steel, 10 @ 14¢
Magnet Steel, 14 @ 16¢

English Steel.
Best Cast, 1 lb 15¢ @ 17¢
Extra Cast, 1 lb 16¢ @ 18¢
Circular Saw Plates, 1 lb 10¢ @ 12¢
Round Machinery, Cast, 1 lb 10¢ @ 12¢
Swaged, Cast, 1 lb 10¢ @ 12¢
Best Double Shear, 1 lb 10¢ @ 12¢
Blister, 1st quality, 1 lb 10¢ @ 12¢
German Steel, 1st quality, 1 lb 10¢ @ 12¢
3d quality, 1 lb 8¢ @ 10¢
Sheet Cast Steel, 1st quality, 1 lb 10¢ @ 12¢
all quality, 1 lb 8¢ @ 10¢
3d quality, 1 lb 6¢ @ 8¢

TIN.—Duty: Plates, Sheets, Taggers and Terminals, 1¢ per lb.; Bars, Block and Pig Iron, 1¢ per lb.

Charcoal Tin Plates.
10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50
10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50
10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50
10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50
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10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50
10 1/2 x 14 1/2 sheets, 1 lb 5.00 @ 5.50

Coke Tin Plates.
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
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10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90

Terne Plates.
Prime Char. 1st quality, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
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10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90
10 1/2 x 14 1/2 sheets, 1 lb 4.75 @ 4.90

Tin Boiler Plates.
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
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10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50
10 1/2 x 14 1/2 sheets, 1 lb 12.00 @ 12.50

COPPER.—Duty: Pig, Bar and Ingot, 4¢ Old Copper, 3¢ New. Manufactured (including all articles of which Copper is a component of chief value), 35¢ ad. valorem.

Ingot, Lake. 1 lb 11 1/4¢ @ 12¢
Ingot, Baltimore. 1 lb 11 1/4¢ @ 12¢
Ingot, Anchor. 1 lb 11 1/4¢ @ 12¢
Razors' Copper and Sheathing. ordinary sizes, 10 oz. per sq. ft. and over, 1 lb 18¢ @ 19¢
Braziers' Copper and Sheathing. ordinary sizes, under 10 oz. and over 10 oz. per sq. ft., 1 lb 19¢ @ 20¢
Braziers' Copper. 10 oz. and 12 oz. per sq. ft., 1 lb 20¢ @ 21¢
Lighter than 10 oz. per sq. ft. 1 lb 21¢ @ 22¢
C. less than 84 in. diam. 1 lb 21¢ @ 22¢
84 in. diam. and over. 1 lb 22¢ @ 23¢
Segment and Pattern Sheets. 1 lb 23¢ @ 24¢
Locomotive Fire-Box Sheets. 1 lb 24¢ @ 25¢
Bolt Copper. 1 lb 25¢ @ 26¢
Copper Bottoms, 14 oz. to sq. ft. and heavier. 1 lb 26¢ @ 27¢
Lighter than 14 oz. 1 lb 27¢ @ 28¢

Tinplate.
14x48, each, 1 lb 6¢ @ 6 1/2¢
14x48, less than case, each, 1 lb 6¢ @ 6 1/2¢
Boiler sizes, 7 and 8 in., each, 1 lb 6¢ @ 6 1/2¢
Boiler sizes, 9 in., each, 1 lb 6¢ @ 6 1/2¢
Other sizes not larger than 90x90, 1 lb 6¢ @ 6 1/2¢
Larger than 90x90, 1 lb 6¢ @ 6 1/2¢
Silver-Plated Sheet Copper for Amalgamating, price as furnished upon application.
For tinning both sides, double the above amount.

O'Neill's Patent Plated Copper.—Net.
14x48, 2 sheets for No. 1, 112 sheets, 1 lb 12.00 @ 12.50
14x48, 2 sheets for No. 2, 112 sheets, 1 lb 12.00 @ 12.50
14x48, 2 sheets for No. 3, 112 sheets, 1 lb 12.00 @ 12.50

BRASS AND GERMAN SILVER.
Brown & Sharpe's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.
Manufacturers' Price List, January 17, 1884

LEAD.—Duty: Pig, 2¢ per 100 lb.; Old Lead, 3¢ per 100 lb.; Pipe and Sheet, 3¢ per lb.

Pig. 1 lb 5¢ @ 5 1/2¢
Pipe. 1 lb 5¢ @ 5 1/2¢
Block Tin Pipe. 1 lb 40¢ @ 45¢
Tin Linet Pipe. 1 lb 15¢ @ 20¢
Sheet. 1 lb 7 1/2¢ @ 8 1/2¢
Shot, 1/2 lb bag, 25 lb. Drop, 81.4¢ @ 82.0¢
Chilled Shot, 1/2 lb bag, 25 lb. 81.70

ANTIMONY.
Hallet's, 1 lb 9¢ @ 9 1/2¢
Cookson, 1 lb 9¢ @ 9 1/2¢
SPELLITE.—Duty: Pigs, Bars and Plates, 1¢ 30

100 lbs.
American, cash, 1 lb 45¢ @ 50¢
Berganport, 1 lb 45¢ @ 50¢
ZINC.—Duty: Pig or Block, 1¢ 50 per 100 lbs. Sheet, 2¢ 50 per lb.

600 lb. cases. 5.50 @ 5.70
Zinc—Open. 1 lb 6 1/4¢ @ 6 3/4¢
Zinc Tubing.—Dis. 25¢

Plain. 1 lb 27¢ @ 28¢
Fancy. 1 lb 28¢ @ 29¢
Scotch and Extra Patterns. 1 lb 28¢ @ 29¢

SABBITT METAL.
N. F. U., 1 lb 6 1/2¢ @ 7¢
X. X., 1 lb 10¢ @ 10 1/2¢
J. B., 1 lb 10¢ @ 10 1/2¢

WIRE.
Market Wire.—Put up in 63 lb. bundles.
Nos. 10 to 14, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Bright Market Wire. 1 lb 67 1/2¢ @ 68 1/2¢
Bale Wire, Nos. 7 to 12. 1 lb 62 1/2¢ @ 63 1/2¢
Annexed Market Wire. 1 lb 67 1/2¢ @ 68 1/2¢
Grave Wire, Nos. 10 to 14. 1 lb 62 1/2¢ @ 63 1/2¢
Coppered Market Wire. 1 lb 62 1/2¢ @ 63 1/2¢
Bale Wire, Nos. 7 to 12. 1 lb 57 1/2¢ @ 58 1/2¢
Galvanized Market Wire. 1 lb 57 1/2¢ @ 58 1/2¢

Stone or Weaving Wire.
Nos. 16 to 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Cast Steel, Steel Wire list. 1 lb 50¢ @ 51¢
Brass and Copper Wire.
Old English Gauge the Standard, Dis. 20¢ @ 25¢

Common High Brass. 1 lb 50¢ @ 51¢
Low Brass. 1 lb 45¢ @ 46¢
Copper. 1 lb 30¢ @ 31¢

All Nos. to No. 16. 1 lb 30¢ @ 31¢
No. 17 and 18. 1 lb 27¢ @ 28¢
No. 19 and 20. 1 lb 25¢ @ 26¢
No. 21. 1 lb 23¢ @ 24¢
No. 22. 1 lb 21¢ @ 22¢
No. 23. 1 lb 19¢ @ 20¢
No. 24. 1 lb 17¢ @ 18¢
No. 25. 1 lb 15¢ @ 16¢
No. 26. 1 lb 13¢ @ 14¢
No. 27. 1 lb 11¢ @ 12¢
No. 28. 1 lb 9¢ @ 10¢
No. 29. 1 lb 7¢ @ 8¢
No. 30. 1 lb 5¢ @ 6¢
No. 31. 1 lb 3¢ @ 4¢
No. 32. 1 lb 1¢ @ 2¢
No. 33. 1 lb 1¢ @ 2¢
No. 34. 1 lb 1¢ @ 2¢
No. 35. 1 lb 1¢ @ 2¢
No. 36. 1 lb 1¢ @ 2¢
No. 37. 1 lb 1¢ @ 2¢
No. 38. 1 lb 1¢ @ 2¢
No. 39. 1 lb 1¢ @ 2¢
No. 40. 1 lb 1¢ @ 2¢
No. 41. 1 lb 1¢ @ 2¢
No. 42. 1 lb 1¢ @ 2¢
No. 43. 1 lb 1¢ @ 2¢
No. 44. 1 lb 1¢ @ 2¢
No. 45. 1 lb 1¢ @ 2¢
No. 46. 1 lb 1¢ @ 2¢
No. 47. 1 lb 1¢ @ 2¢
No. 48. 1 lb 1¢ @ 2¢
No. 49. 1 lb 1¢ @ 2¢
No. 50. 1 lb 1¢ @ 2¢
No. 51. 1 lb 1¢ @ 2¢
No. 52. 1 lb 1¢ @ 2¢
No. 53. 1 lb 1¢ @ 2¢
No. 54. 1 lb 1¢ @ 2¢
No. 55. 1 lb 1¢ @ 2¢
No. 56. 1 lb 1¢ @ 2¢
No. 57. 1 lb 1¢ @ 2¢
No. 58. 1 lb 1¢ @ 2¢
No. 59. 1 lb 1¢ @ 2¢
No. 60. 1 lb 1¢ @ 2¢
No. 61. 1 lb 1¢ @ 2¢
No. 62. 1 lb 1¢ @ 2¢
No. 63. 1 lb 1¢ @ 2¢
No. 64. 1 lb 1¢ @ 2¢
No. 65. 1 lb 1¢ @ 2¢
No. 66. 1 lb 1¢ @ 2¢
No. 67. 1 lb 1¢ @ 2¢
No. 68. 1 lb 1¢ @ 2¢
No. 69. 1 lb 1¢ @ 2¢
No. 70. 1 lb 1¢ @ 2¢
No. 71. 1 lb 1¢ @ 2¢
No. 72. 1 lb 1¢ @ 2¢
No. 73. 1 lb 1¢ @ 2¢
No. 74. 1 lb 1¢ @ 2¢
No. 75. 1 lb 1¢ @ 2¢
No. 76. 1 lb 1¢ @ 2¢
No. 77. 1 lb 1¢ @ 2¢
No. 78. 1 lb 1¢ @ 2¢
No. 79. 1 lb 1¢ @ 2¢
No. 80. 1 lb 1¢ @ 2¢
No. 81. 1 lb 1¢ @ 2¢
No. 82. 1 lb 1¢ @ 2¢
No. 83. 1 lb 1¢ @ 2¢
No. 84. 1 lb 1¢ @ 2¢
No. 85. 1 lb 1¢ @ 2¢
No. 86. 1 lb 1¢ @ 2¢
No. 87. 1 lb 1¢ @ 2¢
No. 88. 1 lb 1¢ @ 2¢
No. 89. 1 lb 1¢ @ 2¢
No. 90. 1 lb 1¢ @ 2¢
No. 91. 1 lb 1¢ @ 2¢
No. 92. 1 lb 1¢ @ 2¢
No. 93. 1 lb 1¢ @ 2¢
No. 94. 1 lb 1¢ @ 2¢
No. 95. 1 lb 1¢ @ 2¢
No. 96. 1 lb 1¢ @ 2¢
No. 97. 1 lb 1¢ @ 2¢
No. 98. 1 lb 1¢ @ 2¢
No. 99. 1 lb 1¢ @ 2¢
No. 100. 1 lb 1¢ @ 2¢

Spring Wire, 8 cents per pound advance. Flat, Square and Half-Round Wire, 4 cents advance on Round Wire. Fancy Wire, not less than 10 cents advance on Round Wire. Spooling on one-pound Spools, 12 cents per pound extra. Spooling on ten-pound Spools or more, 2 cents per pound extra.

MISCELLANEOUS TINNERS' STOCK.
Solder. 1 lb 14¢ @ 14 1/2¢
Warranted. 1 lb 14¢ @ 14 1/2¢
Extra. 1 lb 14¢ @ 14 1/2¢
No. 1 Refined. 1 lb 14¢ @ 14 1/2¢
No. 2 Solder. 1 lb 14¢ @ 14 1/2¢
Extra wiping. 1 lb 14¢ @ 14 1/2¢

Rivets.
Iron and Tinned, new list, Dec. 10, 1881, 1 lb 50¢ @ 51¢
In bulk, new list, Dec. 10, 1881, 1 lb 50¢ @ 51¢
Copper Rivets and Bars, 1 lb 10¢ @ 11¢
Nos. 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Steel Bolts.
American Screw Co., 1 lb 70¢ @ 71¢
R. B. & W., 1 lb 70¢ @ 71¢
R. E. Mfg. Co., 1 lb 70¢ @ 71¢

FRENCH GLASS.
August 20, 1885. Per Box, 50 feet.

Single Thick.
1st. 2d. 3d. 4th.
SIZES. EPH I E H H B

25 6 x 8 to 10 x 15, \$11.50 @ \$12.50
40 11 x 14 to 16 x 24, 17.00 @ 18.00
50 16 x 22 to 20 x 30, 17.00 @ 18.00
54 15 x 26 to 24 x 30, 19.00 @ 20.00
60 26 x 36 to 24 x 36, 20.00 @ 21.00
70 36 x 46 to 30 x 50, 21.50 @ 22.50
80 36 x 46 to 30 x 50, 22.00 @ 23.00
84 30 x 50 to 30 x 54, 23.00 @ 24.00
90 30 x 50 to 30 x 54, 23.00 @ 24.00
94 34 x 58 to 34 x 60, 27.50 @ 28.50
100 36 x 60 to 40 x 60, 31.00 @ 32.00

Double Thick.
1st. 2d. 3d. 4th.
SIZES. EPH I E H H B

25 6 x 8 to 10 x 15, \$14.00 @ \$15.00
40 11 x 14 to 16 x 24, 17.00 @ 18.00
50 16 x 22 to 20 x 30, 17.00 @ 18.00
54 15 x 26 to 24 x 30, 19.00 @ 20.00
60 26 x 36 to 24 x 36, 20.00 @ 21.00
70 36 x 46 to 30 x 50, 21.50 @ 22.50
80 36 x 46 to 30 x 50, 22.00 @ 23.00
84 30 x 50 to 30 x 54, 23.00 @ 24.00
90 30 x 50 to 30 x 54, 23.00 @ 24.00
94 34 x 58 to 34 x 60, 27.50 @ 28.50
100 36 x 60 to 40 x 60, 31.00 @ 32.00

Sizes above—\$15 per box extra for every 5 inches.
Discount 75¢ @ 75¢ and 10¢.

PAPER STOCK, &c.
(Dealers' Selling Prices.)

White Shirt Cuttings, No. 1. 1 lb 6¢ @ 6 1/2¢
Mill Assorted Whites. 1 lb 6¢ @ 6 1/2¢
Unbleached Muslins. 1 lb 6¢ @ 6 1/2¢
City Whites, No. 1. 1 lb 6¢ @ 6 1/2¢
City Whites, No. 2. 1 lb 6¢ @ 6 1/2¢
New Canton Flannels. 1 lb 6¢ @ 6 1/2¢
Second, light. 1 lb 6¢ @ 6 1/2¢
dark. 1 lb 6¢ @ 6 1/2¢
Cotton Canvas. 1 lb 6¢ @ 6 1/2¢
Linon Canvas, No. 1. 1 lb 6¢ @ 6 1/2¢
seconds, City No. 1. 1 lb 6¢ @ 6 1/2¢
seconds, City No. 2. 1 lb 6¢ @ 6 1/2¢
Colors, & cwt. 1 lb 6¢ @ 6 1/2¢
Manila Rope. 1 lb 6¢ @ 6 1/2¢
Gunny Bagging, No. 1. 1 lb 6¢ @ 6 1/2¢
Kentucky Bagging. 1 lb 6¢ @ 6 1/2¢
Burlap Bagging, No. 1. 1 lb 6¢ @ 6 1/2¢
Tar Shavings. 1 lb 6¢ @ 6 1/2¢
Hemp Twine Shavings. 1 lb 6¢ @ 6 1/2¢
Hard White Shavings, No. 1. 1 lb 6¢ @ 6 1/2¢
Soft White Shavings, No. 1. 1 lb 6¢ @ 6 1/2¢
White Shavings, No. 2. 1 lb 6¢ @ 6 1/2¢
Hard White Shavings, No. 2. 1 lb 6¢ @ 6 1/2¢
Mixed Shavings, part White. 1 lb 6¢ @ 6 1/2¢
Ledger and Writing. 1 lb 6¢ @ 6 1/2¢
Solid Stock. 1 lb 6¢ @ 6 1/2¢
Book Stock, No. 1. 1 lb 6¢ @ 6 1/2¢
Pure Manilla. 1 lb 6¢ @ 6 1/2¢
Bagging and Hardware, cwt. 1 lb 6¢ @ 6 1/2¢
Common, 100 lb. 1 lb 6¢ @ 6 1/2¢
Straw Board Cuttings, cwt. 1 lb 6¢ @ 6 1/2¢
Straw Board Cuttings, cwt. 1 lb 6¢ @ 6 1/2¢

PAINTS, OILS, &c.
Black, Lamp—Coach Painters. 1 lb 25¢ @ 26¢
Ordinary. 1 lb 25¢ @ 26¢
Black Ivory Drop, fair. 1 lb 15¢ @ 16¢
best. 1 lb 15¢ @ 16¢

Black Paint, in oil. 1 lb 40¢ @ 41¢
Blue, Prussian, fair to best. 1 lb 40¢ @ 41¢
Chinese dry. 1 lb 70¢ @ 71¢
Ultramarine. 1 lb 40¢ @ 41¢
Brown, Spanish. 1 lb 10¢ @ 11¢
Van Dyke. 1 lb 10¢ @ 11¢
Dryers, Patent American. 1 lb 10¢ @ 11¢
Green Chrome. 1 lb 10¢ @ 11¢
Paris. 1 lb 10¢ @ 11¢
Iron Paint, Bright Red. 1 lb 10¢ @ 11¢
Mineral Paint.

THE WEEK.

A correspondent at Canton speaks of the excitement caused by reports of Chinese troubles on the Pacific Slope and a rumor that the Government at Peking threatened reprisals on United States commerce. The writer expresses a hope that peace will be preserved, since it is not probable that the combined fleet of the United States could reduce or pass the forts below Canton.

The estimated cost of an elevated structure such as that planned by the Brooklyn General Rapid Transit Commission is placed by Engineer Constant at \$20,000,000.

About \$3,000,000 worth of American-made locomotives are sent abroad every year.

The President having signed the Congressional Library bill, the commission named in it is now at liberty to proceed to acquire the site for the building at a cost not to exceed \$550,000. The commission consists of Secretary Lamar, Architect Clark and Librarian A. R. Spofford.

American paper-makers who have examined and tested small sample lots of Mexican fibers declare that they contain excellent material for paper-making, and the only question is whether or not there is to be had enough fiber for supplying the trade in large quantities. The *Mexican Financier* has recently seen reports from Northeastern Mexico which state that vast quantities of various excellent fibers are to be had there, which can be shipped to the United States by railway.

The fraudulent Broadway Railroad charter is annulled by the act of the Legislature, and the affairs of the corporation will be wound up by a receiver appointed by the Supreme Court. On the main bill the vote was 100 yeas and 16 nays. From the assets all valid claims will be satisfied. "Innocent stockholders" have just cause of action against those who received the proceeds of the bonds.

The Mahattan Elevated Railroad last week, on a single day when traffic on the horse railroads was interrupted by the strike, carried over 553,000 passengers without accident or difficulty of any kind.

The boss bakers of Newark, N. J., have advanced the price of bread 1 cent per loaf. The reason given is the increased cost of labor.

The decision of the British Board of Trade the case of the Oregon is in favor of the Junard Steamship Co. and their officers on all the points raised. This will secure the claims for insurance, but what redress passengers have for lost luggage does not appear. The verdict is significant in making no allusion to the bulkhead doors, which all the testimony shows were blocked by coal, and therefore useless.

Work on the Bartholdi Statue will be commenced at once, and it is expected that the whole will be completed by September 3, when notable Frenchmen will participate in the ceremony of unveiling. About \$15,000 more are needed.

The Acting Secretary of the Treasury has requested the Department of State to appoint sanitary inspectors at the United States consulates at Genoa, Naples, Marseilles and Venice, with instructions to give prompt information of the appearance of cholera in any of the consular districts named, and to report the departure of emigrants and merchandise for the United States from infected districts.

The officers of the Stock, Produce, Cotton, Petroleum and other exchanges of this city repaired to Albany last week to protest against Mr. Vedder's tax bill, ostensibly designed to check speculative sales. The bill imposes a special tax of 1 per cent. upon the gross amount of sales made, and has already passed the Senate. President O'Donohue, of the Coffee Exchange, pronounced New York the greatest coffee market in the world, and contended that if this bill was passed the business would be distributed among rival cities. President Moller, of the Petroleum Exchange, said an additional tax on brokers' sales would drive all the exchanges now in New York over to Jersey City, and President Simmons said the tax would practically boycott the business.

The Traders' and Manufacturers' Association of Tokio—the most influential of its kind in Japan—recently submitted the following memorial to the Government: "The fertility and climate of Japan adapt it for every branch of human industry; but, owing to the want of capital, no industry has as yet been developed to its fullest extent. It becomes our duty to submit our views how this want of capital may be supplied. There may be many ways and means to reach the end; however, among the rest, the easiest and the surest way is, in our opinion, the introduction of capital from European and American countries."

The grand future source of cattle supply, if we may believe the accounts lately at hand, is not in the United States or South America, but in Africa. We read that the whole country north of the Orange River and just west of the Transvaal—which appears on the maps as the Kalahari Desert, promises to be the greatest cattle-raising region in the world. The country has been appropriated by the British, they have conferred upon it a new name, Upingtonia, and

already it is spoken of as the future empire of English cattle kings. One of these explorers, Mr. G. A. Farni, who has furnished the London *Graphic* with a series of illustrations of the wonderful resources of the country, affirms that it has all the requirements for cattle-raising on a grand scale, excepting water, but this can be obtained almost everywhere by digging, at a nominal cost; and, what is more, the nucleus of a herd can be bought in Damaraland for the trifling cost of 10/ per head. A native cattle king is already in existence. His name is Kamahanehero, and his possessions are at least 20,000 head.

A company of capitalists is being formed in San Francisco to solve the question of transportation in the Upper San Joaquin Valley and open up nearly half a million more acres which, for want of water, are now little better than a desert. This is to be effected by a canal of 12 feet average depth, which is to extend from Tulare Lake to a junction with the San Joaquin River at the head of navigation, at a cost of only \$1,000,000.

The statements made by the English chancellor of the exchequer that in the last 10 years there has been a decrease in the imperial revenue derived from alcoholic liquors equal to \$22,500,000, and that last year the receipts from this source were nearly \$5,000,000 below the estimate, and more than \$5,000,000 below the receipts derived from this source in the previous year, are facts of striking social importance. Sir William Harcourt said that this falling off was due to changes in the habits of the people, and had been concurrent with an enormous increase in revenue derived from tea, tobacco, fruits and other comforts of life.

The annual report of the Chesapeake and Ohio Railroad shows that in 1885 it was carrying soft coal for 0.448 cent per ton per mile.

The report of the majority of the House Ways and Means Committee on the resolution to terminate the Hawaiian treaty makes a comparison of the present with the past commercial relations between the two Governments unfavorable to the United States, and says that it is apparent that our exports have not grown as fast as was anticipated by friends of the treaty when it was before Congress for adoption. Instead of increasing relatively faster than imports, they have relatively decreased. Of the entire trade for the last fiscal year 76 per cent. represented our imports from the islands and 24 per cent. our exports to them, while in 1874 the relative relations were—imports 67 per cent. and exports 33 per cent. Predictions that the treaty would greatly stimulate our exports of manufactures do not seem to have been fully realized. During the last fiscal year we imported from the Hawaiian Islands articles amounting to \$8,857,497, of which the value of sugar was \$8,207,198, while for the same year we exported to them articles amounting in value to \$2,709,573. Our aggregate export trade to the islands reached its highest point in 1883, and has since that time been falling off. The exports of manufactures of iron and steel reached their highest point in 1882.

The majority close their report with the statement that they recommend the adoption of the resolution.

A hotel 12 stories high, with accommodations for 500 guests, is to be erected in Minneapolis at a cost of \$750,000. It is the intention to have the dining-room on the 10th floor, the kitchen on the 11th and the laundry and servants' quarters on the 12th.

The merchant bar mill at Harrisburg, was destroyed by a fire caused by the explosion of a lamp in the oilroom. Much of the machinery escaped material danger, and it is believed that an insurance of \$40,000 will cover the loss.

The losses by the flood at Montreal are now estimated at \$1,685,000, exclusive of damage to the streets and losses by the gas and electric-light companies.

The Iowa census of 1885 showed an increase of population amounting to 403,436, the total being 1,753,980, as against 1,350,544 in 1875. This gives a gain of about 30 per cent. during the past 10 years, or an average annual increase of about 3 per cent.

Great numbers of idle men in St. Louis have been recruited by the army of tramps, who do not care to work so long as they are paid for doing nothing. The original strikers, or those recently thrown out of work under orders from the assemblies, were estimated at 12,000, and such as are receiving aid are said by one of those apparently well informed to average \$1 per day.

The possibility that China will enter the English markets as a large buyer of railway materials excites glowing expectations on the part of the London *Saturday Review*, which says: "Once orders are placed here in England for iron for railway construction in China there will inevitably be a considerable rise in the price of iron and in the prices of the shares of iron companies."

The depression through which we are now passing is to a large extent due to the fact that this change in the instruments of production has nearly come to an end. But if so vast an Empire as that of China takes up the work of railway building new activity will be imparted to our greatest in-

dustries, and a period of great prosperity may be expected to ensue. The prosperity will be marred, of course, as it has been in the past, by over-speculation. And it probably will be adversely affected, too, by a too great haste on the part of China to carry through the work upon which it has entered. But for a while it is reasonable to assume that the building of railways in China, assuming that it is carried on on a considerable scale, will give prosperity to our iron and coal trades, and therefore to all the trades that are subsidiary to them. It will impart prosperity, too, to the railways and to our shipbuilding, and generally it will have a beneficial effect upon the whole commercial community."

The manufacturing town of Lee, in Berkshire County, Mass., was almost destroyed by the breaking of a dam built across a deep ravine. The loss to mill and other property owners will reach \$200,000, and seven persons lost their lives. Four paper manufacturers are heavy losers. Harrison Garfield's mill and dam are injured to the extent of \$30,000. John Verran's dam, below Garfield's, was demolished, and the loss is estimated at \$20,000. The Decker & Sabin Mill shared the fate of the others.

The exports of San Francisco for the last quarter were valued at \$10,094,000, of which total more than 50 per cent. went to Great Britain. The Hawaiian Islands and China are next in the order of their importance among the export markets. Of the exported products wheat ranks first, the valuation being \$7,300,000. Trade with Mexico increases.

A special meeting of the New York Chamber of Commerce was held on Tuesday to consider what action can be taken "with a view of sustaining and enforcing existing laws for the protection of all classes of our citizens in the peaceful pursuit of their business and the prevention of illegal interference therewith." The resolutions adopted recommend that important differences between employers and employed be submitted to arbitration, and, while recognizing the legal right of the latter to strike, remind them that when they quit work they vacate their places absolutely—that the employer remains under no obligation to receive them again in preference to others.

The dilapidated structure in Jersey City known as the Erie Railway Depot is being demolished, to make way for a handsome iron building 600 x 140, for the use of the company.

The North German Gazette (Prince Bismarck's organ), speaking of the possibilities of war between France and Germany, says it has no doubt that France would take the first suitable opportunity to revenge herself upon Germany.

A lot of 1000 tons of sugar was received by the refineries in St. Louis from Sandwich Island planters who are endeavoring to control the crop in opposition to "King Spreckles."

The South Australian wheat harvest amounts to 5,161,000 bushels, while only 36,000 are available for export.

The Hebrew Technical Institute or normal training school in Crosby street held its second anniversary at the Temple Emanuel, Forty-third street and Fifth avenue, last week. The school was founded two years ago with the object of directing the attention of Jewish youths to the great opportunities in industrial fields. Instruction is given in mathematics, physics, the ordinary English branches, free-hand drawing, carpentry, wood turning and metal working. The full course requires three years for completion. During the first two years the principles of many trades are carefully taught, and in the third year the pupils will be trained in some special trade. The large church was crowded. Carl Schurz in an address said: "The public schools, instead of aiming to make boys merchants, should adopt some system by which boys so inclined would be taught the rudiments of trades. The Hebrew Technical Institute was not endeavoring to make great artisans. It put the tools in the hands of the pupil, and taught him their use and gave him the opportunity of testing and developing his faculties. The Institute shows him how to get on, so that when he goes to a shop he is on a level with the others."

The New York State Prison Superintendent calls upon the Legislature for more money to support idle convicts. Mr. Baker represents that the appropriation of \$800,000 for the expenses of manufacturing in the State prisons is not sufficient to carry on the State-account industries already established for the year ending September 30, 1886. The wardens of the Auburn and the Clinton State prisons estimate that \$300,000 more will be sufficient to engage the convicts for the balance of this fiscal year, which ends September 30, 1886. The immediate need is money for the purchase of plant and materials, and when the stove contract in Sing Sing expires next February the need of employment will be more pressing.

Among the heavy tax payers in New York City banking institutions are conspicuous. The names include William W. Astor, \$32,496; American Exchange National Bank, \$124,795; Broadway and Seventh Avenue Railroad, \$35,210; Bank of America, \$84,277; Bank of New York, \$49,135; Bank of the State of New York, \$14,000;

Consolidated Gas Co., \$283,578; Chemical National Bank, \$85,050; Corn Exchange Bank, \$30,000; Fourth National Bank, \$69,543; Gallatin National Bank, \$31,000; Importers' and Traders' National, \$66,813; Mechanics' National, \$46,832; National Bank of Commerce, \$148,881; National Park Bank, \$40,600; Union National Bank, \$32,000; William H. Vanderbilt, \$24,000.

The Knights of Labor at St. Louis notified the Missouri Car and Foundry Co. that they must furnish no further supplies of nuts, bolts, coupling-pins, links, &c., to the Missouri Pacific Railroad Co. The Car and Foundry Co. replied that the demands upon them could not be acceded to, and at last accounts it seemed probable that a sufficient working force would stand by the concern.

The affairs of E. Remington & Sons, of Ilion, have been placed in the hands of Addison Brill and A. H. Russell as receivers. A Utica telegram says: "The suspension has been inevitable for a long time. When the Remingtons had large contracts for arms everybody made money and spent it freely, making no provision for a rainy day. The manufacture of sporting goods, the agricultural works, and the type-writer factory enabled them to live along, but times have been by no means prosperous. The liabilities of the concern are about \$1,000,000, mostly in paper. Only about \$12,000 is in judgments. For years the firm has never had a pay day, and men got their wages in orders on the concern. The merchants took these orders in payment for goods, and when they had a sufficient amount they exchanged them for the Remingtons notes, which were frequently renewed and have accumulated until now they aggregate about \$300,000. There were 800 men employed in the works, and the majority, if not all of them, have been paid during the last four or five years in orders only, and have not seen a cent of money. The out-of-town creditors are iron, brass and coal dealers. The plant is valued at \$1,500,000, though it inventoried last January at \$2,000,000. Philo and Eliphalet Remington have made individual assignments to Charles Harder, of Ilion.

Since the Genesta's visit last summer there is a perceptible boom in steam yachting, and quite a number of vessels have been ordered from our builders.

Sutton & Co., of New York, state that the rate of freight on hardware and other dry merchandise by the Dispatch Line ships to San Francisco will be 37½ cents per 100 pounds weight until further notice.

Labor disturbances in England prejudicial to the employer, particularly the agitation designed to shorten the hours which constitute a day's work, have tended probably more than any other cause to build up competitive markets. Germans are quick to take advantage of any favoring circumstance, the workmen seeming to share in the ambition to produce a finished article at a low cost, looking to the ultimate benefits to the trade at large rather than to considerations having more immediate reference to personal care and comfort. At the Wolverhampton Chamber of Commerce quite recently the acknowledgement was frankly made that Germans were pressing England not only in her colonies, but in the home markets, with a class of goods comprising locks, hammers and a variety of edge tools, as well as with the coarser products of industry, such as iron, steel, wire, girders, &c. Interference with the employers' methods and management sometimes, like two-edged tools, cuts both ways.

The consul for Peru in New York makes public a decree of his Government dated March 18, relating to the duties of consignees, the masters of vessels, &c., particularly as relates to certified documents, certain formalities being insisted upon, under heavy penalties.

Reports lately received from China are to the effect that an English, German and Chinese syndicate has entered into a contract with the Mexican Government, agreeing to send 600,000 Chinese to Mexico within the next 12 months, and that the Mexican Government had agreed to give each Chinaman 20 acres of land on the Pacific Coast. That a scheme of this character has been favored in Mexico seems probable, though but little definite information on the subject is available. The idea attributed to its promoters is to erect a barrier to the influence of the United States.

The opening of navigation on the St. Lawrence River and the canals is the signal for a heavy forward movement in grain. The Dominion Government at Ottawa has promptly announced a reduction of 18 cents per ton on the Welland Canal and 13 cents on the Lachine Canal, leaving 2 cents the through rate. The cargoes of grain afloat from Chicago alone exceed 5,000,000 bushels, to which Milwaukee adds 1,200,000, not to speak of large quantities en route from Detroit, Toledo and Duluth. As the Buffalo elevators have an aggregate capacity of less than 6,000,000 bushels and are already one-third full, a glut is looked for, with claims for demurrage.

Coal Market.

The Anthracite Coal market is firm, and some of the wholesale jobbers speak of receiving fully as many orders as they are will-

ing to accept in the present disturbed condition of the labor market. It is even suspected that the demand for Coal is not altogether natural, as rumors of a possible strike among miners throughout the Anthracite region have gained wide currency, and consumers may wish to secure themselves beyond contingency. As to a strike, the Coal companies have no definite information; in any case, contracting parties are released under the usual terms of agreement where the circumstances such as here contemplated made delivery impossible. Aside from stove sizes, such as Lump and Pea, the market is dull. We quote: Broken and Egg, \$3.15; Stove, \$3.50; Nut, \$3; Pea, \$1.75 @ \$1.85—all White Ash, either hard or free-burning. Special Coals, as usual, are sold at higher figures.

Imports.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending April 28, 1886:

Hardware.	Order.
Bailey Wringing Co. Fig. tons, 1925	Spiegelglas, tons, 900
Machines, cs., 2	Rods, bbls., 5772
Baker Herman & Co. Wire, pkgs., 266	Wire rods, pkgs., 2695
Hardware, cutlery and guns, pkgs., 62	Rings, 36
Drexel, Morgan & Co. Arms, cs., 15	Spiegel, cks., 78
Cases, 20	
Field Alfred & Co. Cutlery, cs., 4	
Packages, 5	
Anvils, 25	
Cases, 2	
Gerdan Otto Bundles, 492	
Godfrey Chas. Mds., cs., 3	
Gurney F. B. Case, 1	
Hartley & Graham, Mds., cs., 18	
Hoadley & Co. Case, 1	
Johnson John & Co. Machinery, pkgs., 5; pcs., 6	
Laing & Bourman, Machinery, case, 1	
Laur C. F. Case, 1	
Loyd & Magnus, Case, 1	
Markt & Co. Cases, 19	
McLaughlin's Sons J. Mach'y, cs., 12	
Newton & Shipman, Files, cks., 2	
Rosenthal J. & Co. Pkgs., 10	
Stone & Downer, Mach'y, cs., 2	
Smith & Fudger, Cutlery, cs., 3	
Sellers W. B. Cutlery, cs., 2	
Sanderson & Son, Broken axes, box, 1	
Spelman W. B. Case, 1	
Schovering, Daly & Gales, Guns, cs., 2	
Cases, 5	
Schulze & Ruckgaler, Gun barrels, 17	
Steglich & Balke, Cases, 12	
Sutro Bros. Machinery, part, 1	
Taylor Thos. Cases, 3	
Wallach Willy, Cases, 5	
Wiebusch & Hilger, Anvils, 228	
Pkgs., 24	
Witte John G. & Bro. Cutlery, cs., 16	
Wolf H. & Co. Case, 1	
Order.	
Machines, cs., 12	
Mach'y, pkgs., 14	
Pkgs. for Port Ld., 157	
Cases, 4	
Order.	
Boat, 1	
Baring Bros. & Co. Bars, 10,552	
Wire rods, coils, 771	
Rods, bbls., 4041	
Ore, tons, 236	
Ore, kg., 537,000	
Bbls., 3101	
Brockner, Evans & Co. Wire netg. rolls, 504	
Bureau of Ordnance, Tel. cable, drum, 1	
Coddington T. B. & Co. Sheets, pkgs., 391	
Crocker Bros. Ferro. iron, lot, 1	
Spiegel iron, tons, 150	
Henderson Bros. Pig, tons, 350	
Lillienberg N. Pig, pcs., 10,122	
Lough G. F. & Co. Old iron, cks., 24	
Mason J. W. & Co. Wire rope, pkgs., 3	
McLaughlin's Sons, J. Castings, 13	
Cylinders, 13	
Naylor & Co. Spigels, tons, 130	
Nail rods, bbls., 350	
Rivet rods, cs., 790	
Perkins C. L. Spigels, tons, 850	
Plock & Co. Bars, 6219	
Cases, 2684	
Bbls., 1128	
Stetson Geo. W. & Co. Pig, tons, 100	
Upton, Walton & Co. Wire rope, coils, 2	

The imports at this port of Cutlery, Hardware and Metals for the week ending April 23 were as follows:

Quantity.	Value.
Brass goods.....	36 \$2,872
Bronzes.....	29 1,101
Chains and anchors.....	13 1,145
Clocks.....	33 2,378
Copper.....	112 54,691
Cutlery.....	112 34,108
Dutch metal.....	5 629
Guns.....	32 4,928
Hardware.....	20 3,143
Iron, pig, tons.....	1,272 18,020
Iron, sheet, tons.....	21 1,490
Iron, quantities, tons.....	1,780 28,547
Iron, other, tons.....	1,801 26,730
Lead, pig.....	794 3,303
Machinery.....	39 3,889
Metal goods.....	400 40,005
Nails.....	2 261
Needles.....	25 9,665
Nickel.....	25 99
Old metal.....	2 7,005
Patina.....	8 310
Perforation caps.....	39 4,330
Pins.....	800 91,809
Quicksilver.....	215 10,442
Regulus antimony.....	28 2,480
Saddlery.....	81,755 58,579
Steel.....	5,398 38,512
Tin, bbls.....	1,132 5,781
Tin, 0.007 slabs, 580,364 lb.	
Wire.....	

WHOLESALE METAL PRICES, April 28, 1886.

ESTABLISHED 1853.

METALS.

IRON.—Duty: Bars, 8-10¢ to 11-10¢ per lb.; provided that no Bar Iron shall pay a less rate of duty than 35¢. Sheet, 11-10¢ to 1-10¢ per lb. Band, Hoop and Scroll, 1¢ to 1-10¢ per lb. Railroad Bars weighing more than 25 lb. per yard, 7-10¢ to 1¢ per lb.

Standard American Pig Iron.
 Foundry No. 1, 10¢ to 11-10¢ per lb.
 Foundry No. 2, 10¢ to 11-10¢ per lb.
 Gray Forge, 10¢ to 11-10¢ per lb.

No. 1 Scotch Pig Iron.
 Carnbroe, 10¢ to 11-10¢ per lb.
 Coltness, 10¢ to 11-10¢ per lb.
 Shotts, 10¢ to 11-10¢ per lb.
 Langarock, 10¢ to 11-10¢ per lb.
 Gartcharrie, 10¢ to 11-10¢ per lb.
 Langloan, 10¢ to 11-10¢ per lb.
 Summerlee, 10¢ to 11-10¢ per lb.
 Dalmeny, 10¢ to 11-10¢ per lb.
 Eglinton, 10¢ to 11-10¢ per lb.
 Clyde, 10¢ to 11-10¢ per lb.

Steel, at Eastern mills. 10¢ to 11-10¢ per lb.
 U.S. Steel, 10¢ to 11-10¢ per lb.

Wrought, 10¢ to 11-10¢ per lb.

Bar Iron from Store.

Common Iron: 10¢ to 11-10¢ per lb.

Refined Iron: 10¢ to 11-10¢ per lb.

1 to 2 in. round and square: 10¢ to 11-10¢ per lb.

1 to 2 in. x 1/2 in. flat: 10¢ to 11-10¢ per lb.

1 to 2 in. x 1/4 in. flat: 10¢ to 11-10¢ per lb.

Rods, 1/2 in. and 1-1/2 in. round and square: 10¢ to 11-10¢ per lb.

Bands, 1 to 2 in. x 1/2 in. flat: 10¢ to 11-10¢ per lb.

Burden's Best Iron, base price: 10¢ to 11-10¢ per lb.

Burden's H. & S. Iron, base price: 10¢ to 11-10¢ per lb.

Norway Nail Rods: 10¢ to 11-10¢ per lb.

Sheet Iron from Store.

Common: 10¢ to 11-10¢ per lb.

Galvanized: 10¢ to 11-10¢ per lb.

Galvanized: 10¢ to 11-10¢ per lb.

Galvanized: 10¢ to 11-10¢ per lb.

Galvanized: 10¢ to 11-10¢ per lb.

American Russia: 10¢ to 11-10¢ per lb.

Russia: 10¢ to 11-10¢ per lb.

American Cold Rolled: 10¢ to 11-10¢ per lb.

Iron Wire.—(See Wire.)

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb. or less, 45¢ ad. val.; valued above 4¢ and not above 10¢, 35¢ ad. val.; valued above 10¢ and not above 15¢, 30¢ ad. val.; valued above 15¢ and not above 20¢, 25¢ ad. val.; valued above 20¢ and not above 25¢, 20¢ ad. val.; valued above 25¢ and not above 30¢, 15¢ ad. val.; valued above 30¢ and not above 35¢, 10¢ ad. val.; valued above 35¢ and not above 40¢, 5¢ ad. val.; valued above 40¢ and not above 45¢, 0¢ ad. val.; valued above 45¢ and not above 50¢, 0¢ ad. val.; valued above 50¢ and not above 55¢, 0¢ ad. val.; valued above 55¢ and not above 60¢, 0¢ ad. val.; valued above 60¢ and not above 65¢, 0¢ ad. val.; valued above 65¢ and not above 70¢, 0¢ ad. val.; valued above 70¢ and not above 75¢, 0¢ ad. val.; valued above 75¢ and not above 80¢, 0¢ ad. val.; valued above 80¢ and not above 85¢, 0¢ ad. val.; valued above 85¢ and not above 90¢, 0¢ ad. val.; valued above 90¢ and not above 95¢, 0¢ ad. val.; valued above 95¢ and not above 100¢, 0¢ ad. val.

For American Steel, see Pittsburgh quotations.

Chrome Steel.

Too, Steel, ordinary sizes, 10¢ to 11-10¢ per lb.

Adamantine Shoes and Dies, 10¢ to 11-10¢ per lb.

Magnet Steel, 10¢ to 11-10¢ per lb.

English Steel.

Best Cast, 10¢ to 11-10¢ per lb.

Extra Cast, 10¢ to 11-10¢ per lb.

Circular Saw Plates, 10¢ to 11-10¢ per lb.

Round Machinery, Cast, or polished, in any way, 10¢ to 11-10¢ per lb.

Swaged, Cast, 10¢ to 11-10¢ per lb.

Best Double Shear, 10¢ to 11-10¢ per lb.

Blister, 1st quality, 10¢ to 11-10¢ per lb.

German Steel, Best, 10¢ to 11-10¢ per lb.

3d quality, 10¢ to 11-10¢ per lb.

3d quality, 10¢ to 11-10¢ per lb.

Sheet Cast Steel, 1st quality, 10¢ to 11-10¢ per lb.

1st quality, 10¢ to 11-10¢ per lb.

3d quality, 10¢ to 11-10¢ per lb.

TIN.—Duty: Bars, Blocks and Pig Iron, 10¢ to 11-10¢ per lb.

10¢ to 11-10¢ per lb.

Strait, 10¢ to 11-10¢ per lb.

English, 10¢ to 11-10¢ per lb.

Bar, 10¢ to 11-10¢ per lb.

Charcoal Tin Plates.

10¢ to 11-10¢ per lb.

10¢ to 11-10¢ per lb.

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10¢ to 11-10¢ per lb.

LEAD.—Duty: Pig, 8¢ per 100 lb.; Old Lead, 8¢ per 100 lb.

Pig, 8¢ per 100 lb.

Block Tin Pipe, 8¢ per 100 lb.

Tin Lined Pipe, 8¢ per 100 lb.

Sheet, 8¢ per 100 lb.

Shot, 8¢ per 100 lb.

Chilled Shot, 8¢ per 100 lb.

ANTIMONY.

Hallett's, 8¢ per 100 lb.

Cook's, 8¢ per 100 lb.

SPELTER.—Duty: Pigs, Bars and Plates, 10¢ per 100 lb.

10¢ per 100 lb.

American, cash, 10¢ per 100 lb.

Bergensport, 10¢ per 100 lb.

ZINC.—Duty: Pig or Block, 10¢ per 100 lb.

Sheet, 10¢ per 100 lb.

600 lb. casks, 10¢ per 100 lb.

Zinc—Open, 10¢ per 100 lb.

Zinc Tubing, 10¢ per 100 lb.

Plain, 10¢ per 100 lb.

Scotch and Extra Patterns, 10¢ per 100 lb.

HABBIT METAL.

10¢ per 100 lb.

WIRE.

Market Wire.—Put up in 63 lb. bundles.

Nos. 00 to 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.

Bright Market Wire, 10¢ per 100 lb.

Charcoal, 10¢ per 100 lb.

10¢ per 100 lb.

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Black Paint, in oil, 8¢ per 55 lb. can; 8¢ per 55 lb. can.

Blue, Prussian, fair to best, 10¢ per 55 lb. can.

Chinese dry, 10¢ per 55 lb. can.

Ultramarine, 10¢ per 55 lb. can.

Brown, Spanish, 10¢ per 55 lb. can.

Van Dyke, 10¢ per 55 lb. can.

Dryers, Patent American, 10¢ per 55 lb. can.

Green Chrome, 10¢ per 55 lb. can.

Paris, 10¢ per 55 lb. can.

Iron Paint, Bright Red, 10¢ per 55 lb. can.

Brown, 10¢ per 55 lb. can.

Ground in oil, Bright Red, 10¢ per 55 lb. can.

Red, 10¢ per 55 lb. can.

Purple, 10¢ per 55 lb. can.

Ground in oil, Purple, 10¢ per 55 lb. can.

White Lead, American, pure dry, 10¢ per 55 lb. can.

White Lead, English, Prime, 10¢ per 55 lb. can.

Yellow Ochre, French, 10¢ per 55 lb. can.

Yellow Ochre, in oil, 10¢ per 55 lb. can.

Yellow Chrome, 10¢ per 55 lb. can.

Zinc White, American, No. 1, dry, 10¢ per 55 lb. can.

Zinc White, American, No. 1, in oil, 10¢ per 55 lb. can.

French (Paris Dry), 10¢ per 55 lb. can.

Oils.

Deasch White, 10¢ per 55 lb. can.

Sperm, 10¢ per 55 lb. can.

Whale, 10¢ per 55 lb. can.

Drilling, 10¢ per 55 lb. can.

Empire Cylinder, 10¢ per 55 lb. can.

Fish Oil, pressed, 10¢ per 55 lb. can.

Lard, Prime Winter, 10¢ per 55 lb. can.

Linseed, Raw, in casks and kegs, 10¢ per 55 lb. can.

Holled, 10¢ per 55 lb. can.

Western, 10¢ per 55 lb. can.

Calcutta, 10¢ per 55 lb. can.

Machinery, 10¢ per 55 lb. can.

Neat's Oil, 10¢ per 55 lb. can.

Neat's Oil, 10¢ per 55 lb. can.

Signal, 10¢ per 55 lb. can.

Tallow, 10¢ per 55 lb. can.

West Virginia, 10¢ per 55 lb. can.

Sundries.

Asphaltum, Cuban, 10¢ per 55 lb. can.

Egyptian, 10¢ per 55 lb. can.

Benine, 10¢ per 55 lb. can.

Chalk, 10¢ per 55 lb. can.

Flour, 10¢ per 55 lb. can.

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THE WEEK.

A correspondent at Canton speaks of the excitement caused by reports of Chinese troubles on the Pacific Slope and a rumor that the Government at Peking threatened reprisals on United States commerce. The writer expresses a hope that peace will be preserved, since it is not probable that the combined fleet of the United States could reduce or pass the forts below Canton.

The estimated cost of an elevated structure such as that planned by the Brooklyn General Rapid Transit Commission is placed by Engineer Constant at \$20,000,000.

About \$3,000,000 worth of American-made locomotives are sent abroad every year.

The President having signed the Congressional Library bill, the commission named in it is now at liberty to proceed to acquire the site for the building at a cost not to exceed \$550,000. The commission consists of Secretary Lamar, Architect Clark and Librarian A. R. Spofford.

American paper-makers who have examined and tested small sample lots of Mexican fibers declare that they contain excellent material for paper-making, and the only question is whether or not there is to be had enough fiber for supplying the trade in large quantities. The *Mexican Financier* has recently seen reports from Northeastern Mexico which state that vast quantities of various excellent fibers are to be had there, which can be shipped to the United States by railway.

The fraudulent Broadway Railroad charter is annulled by the act of the Legislature, and the affairs of the corporation will be wound up by a receiver appointed by the Supreme Court. On the main bill the vote was 100 yeas and 16 nays. From the assets all valid claims will be satisfied. "Innocent stockholders" have just cause of action against those who received the proceeds of the bonds.

The Mahattan Elevated Railroad last week, on a single day when traffic on the horse railroads was interrupted by the strike, carried over 553,000 passengers without accident or difficulty of any kind.

The boss bakers of Newark, N. J., have advanced the price of bread 1 cent per loaf. The reason given is the increased cost of labor.

The decision of the British Board of Trade the case of the Oregon is in favor of the Junard Steamship Co. and their officers on all the points raised. This will secure the claims for insurance, but what redress passengers have for lost luggage does not appear. The verdict is significant in making no allusion to the bulkhead doors, which all the testimony shows were blocked by coal, and therefore useless.

Work on the Bartholdi Statue will be commenced at once, and it is expected that the whole will be completed by September 3, when notable Frenchmen will participate in the ceremony of unveiling. About \$15,000 more are needed.

The Acting Secretary of the Treasury has requested the Department of State to appoint sanitary inspectors at the United States consulates at Genoa, Naples, Marseilles and Venice, with instructions to give prompt information of the appearance of cholera in any of the consular districts named, and to report the departure of emigrants and merchandise for the United States from infected districts.

The officers of the Stock, Produce, Cotton, Petroleum and other exchanges of this city repaired to Albany last week to protest against Mr. Vedder's tax bill, ostensibly designed to check speculative sales. The bill imposes a special tax of 1 per cent. upon the gross amount of sales made, and has already passed the Senate. President O'Donohue, of the Coffee Exchange, pronounced New York the greatest coffee market in the world, and contended that if this bill was passed the business would be distributed among rival cities. President Moller, of the Petroleum Exchange, said an additional tax on brokers' sales would drive all the exchanges now in New York over to Jersey City, and President Simmons said the tax would practically boycott the business.

The Traders' and Manufacturers' Association of Tokio—the most influential of its kind in Japan—recently submitted the following memorial to the Government: "The fertility and climate of Japan adapt it for every branch of human industry; but, owing to the want of capital, no industry has as yet been developed to its fullest extent. It becomes our duty to submit our views how this want of capital may be supplied. There may be many ways and means to reach the end; however, among the rest, the easiest and the surest way is, in our opinion, the introduction of capital from European and American countries."

The grand future source of cattle supply, if we may believe the accounts lately at hand, is not in the United States or South America, but in Africa. We read that the whole country north of the Orange River and just west of the Transvaal—which appears on the maps as the Kalahari Desert, promises to be the greatest cattle-raising region in the world. The country has been appropriated by the British, they have conferred upon it a new name, Upingtonia, and

already it is spoken of as the future empire of English cattle kings. One of these explorers, Mr. G. A. Farni, who has furnished the London *Graphic* with a series of illustrations of the wonderful resources of the country, affirms that it has all the requirements for cattle-raising on a grand scale, excepting water, but this can be obtained almost everywhere by digging, at a nominal cost; and, what is more, the nucleus of a herd can be bought in Damaraland for the trifling cost of 10/ per head. A native cattle king is already in existence. His name is Kamahamehero, and his possessions are at least 20,000 head.

A company of capitalists is being formed in San Francisco to solve the question of transportation in the Upper San Joaquin Valley and open up nearly half a million more acres which, for want of water, are now little better than a desert. This is to be effected by a canal of 12 feet average depth, which is to extend from Tulare Lake to a junction with the San Joaquin River at the head of navigation, at a cost of only \$1,000,000.

The statements made by the English chancellor of the exchequer that in the last 10 years there has been a decrease in the imperial revenue derived from alcoholic liquors equal to \$22,500,000, and that last year the receipts from this source were nearly \$5,000,000 below the estimate, and more than \$5,000,000 below the receipts derived from this source in the previous year, are facts of striking social importance. Sir William Harcourt said that this falling off was due to changes in the habits of the people, and had been concurrent with an enormous increase in revenue derived from tea, tobacco, fruits and other comforts of life.

The annual report of the Chesapeake and Ohio Railroad shows that in 1885 it was carrying soft coal for 0.448 cent per ton per mile.

The report of the majority of the House Ways and Means Committee on the resolution to terminate the Hawaiian treaty makes a comparison of the present with the past commercial relations between the two Governments unfavorable to the United States, and says that it is apparent that our exports have not grown as fast as was anticipated by friends of the treaty when it was before Congress for adoption. Instead of increasing relatively faster than imports, they have relatively decreased. Of the entire trade for the last fiscal year 76 per cent. represented our imports from the islands and 24 per cent. our exports to them, while in 1874 the relative relations were—imports 67 per cent. and exports 33 per cent. Predictions that the treaty would greatly stimulate our exports of manufactures do not seem to have been fully realized. During the last fiscal year we imported from the Hawaiian Islands articles amounting to \$8,857,497, of which the value of sugar was \$8,207,198, while for the same year we exported to them articles amounting in value to \$2,709,573. Our aggregate export trade to the islands reached its highest point in 1883, and has since that time been falling off. The exports of manufactures of iron and steel reached their highest point in 1882. The majority close their report with the statement that they recommend the adoption of the resolution.

A hotel 12 stories high, with accommodations for 500 guests, is to be erected in Minneapolis at a cost of \$750,000. It is the intention to have the dining-room on the 10th floor, the kitchen on the 11th and the laundry and servants' quarters on the 12th.

The merchant bar mill at Harrisburg, Pa., was destroyed by a fire caused by the explosion of a lamp in the oilroom. Much of the machinery escaped material danger, and it is believed that an insurance of \$40,000 will cover the loss.

The losses by the flood at Montreal are now estimated at \$1,685,000, exclusive of damage to the streets and losses by the gas and electric-light companies.

The Iowa census of 1885 showed an increase of population amounting to 403,436, the total being 1,753,980, as against 1,350,544 in 1875. This gives a gain of about 30 per cent. during the past 10 years, or an average annual increase of about 3 per cent.

Great numbers of idle men in St. Louis have been recruited by the army of tramps, who do not care to work so long as they are paid for doing nothing. The original strikers, or those recently thrown out of work under orders from the assemblies, were estimated at 12,000, and such as are receiving aid are said by one of those apparently well informed to average \$1 per day.

The possibility that China will enter the English markets as a large buyer of railway materials excites glowing expectations on the part of the London *Saturday Review*, which says: "Once orders are placed here in England for iron for railway construction in China there will inevitably be a considerable rise in the price of iron and in the prices of the shares of iron companies." * * * The depression through which we are now passing is to a large extent due to the fact that this change in the instruments of production has nearly come to an end. But if so vast an Empire as that of China takes up the work of railway building new activity will be imparted to our greatest in-

dustries, and a period of great prosperity may be expected to ensue. The prosperity will be marred, of course, as it has been in the past, by over-speculation. And it probably will be adversely affected, too, by a too great haste on the part of China to carry through the work upon which it has entered. But for a while it is reasonable to assume that the building of railways in China, assuming that it is carried on on a considerable scale, will give prosperity to our iron and coal trades, and therefore to all the trades that are subsidiary to them. It will impart prosperity, too, to the railways and to our shipbuilding, and generally it will have a beneficial effect upon the whole commercial community."

The manufacturing town of Lee, in Berkshire County, Mass., was almost destroyed by the breaking of a dam built across a deep ravine. The loss to mill and other property owners will reach \$200,000, and seven persons lost their lives. Four paper manufacturers are heavy losers. Harrison Garfield's mill and dam are injured to the extent of \$30,000. John Verran's dam, below Garfield's, was demolished, and the loss is estimated at \$20,000. The Decker & Sabin Mill shared the fate of the others.

The exports of San Francisco for the last quarter were valued at \$10,094,000, of which total more than 50 per cent. went to Great Britain. The Hawaiian Islands and China are next in the order of their importance among the export markets. Of the exported products wheat ranks first, the valuation being \$7,300,000. Trade with Mexico increases.

A special meeting of the New York Chamber of Commerce was held on Tuesday to consider what action can be taken "with a view of sustaining and enforcing existing laws for the protection of all classes of our citizens in the peaceful pursuit of their business and the prevention of illegal interference therewith." The resolutions adopted recommend that important differences between employers and employed be submitted to arbitration, and, while recognizing the legal right of the latter to strike, remind them that when they quit work they vacate their places absolutely—that the employer remains under no obligation to receive them again in preference to others.

The dilapidated structure in Jersey City known as the Erie Railway Depot is being demolished, to make way for a handsome iron building 600 x 140, for the use of the company.

The *North German Gazette* (Prince Bismarck's organ), speaking of the possibilities of war between France and Germany, says it has no doubt that France would take the first suitable opportunity to revenge herself upon Germany.

A lot of 1000 tons of sugar was received by the refiners in St. Louis from Sandwich Island planters who are endeavoring to control the crop in opposition to "King Spreckles."

The South Australian wheat harvest amounts to 5,161,000 bushels, while only 36,000 are available for export.

The Hebrew Technical Institute or normal training school in Crosby street held its second anniversary at the Temple Emanuel, 40, Forty-third street and Fifth avenue, last week. The school was founded two years ago with the object of directing the attention of Jewish youths to the great opportunities in industrial fields. Instruction is given in mathematics, physics, the ordinary English branches, free-hand drawing, carpentry, wood turning and metal working. The full course requires three years for completion. During the first two years the principles of many trades are carefully taught, and in the third year the pupils will be trained in some special trade. The large church was crowded. Carl Schurz in an address said: "The public schools, instead of aiming to make boys merchants, should adopt some system by which boys so inclined would be taught the rudiments of trades. The Hebrew Technical Institute was not endeavoring to make great artisans. It put the tools in the hands of the pupil, and taught him their use and gave him the opportunity of testing and developing his faculties. The Institute shows him how to get on, so that when he goes to a shop he is on a level with the others."

The New York State Prison Superintendent calls upon the Legislature for more money to support idle convicts. Mr. Baker represents that the appropriation of \$800,000 for the expenses of manufacturing in the State prisons is not sufficient to carry on the State-account industries already established for the year ending September 30, 1886. The wardens of the Auburn and the Clinton State prisons estimate that \$300,000 more will be sufficient to engage the convicts for the balance of this fiscal year, which ends September 30, 1886. The immediate need is money for the purchase of plant and materials, and when the stove contract in Sing Sing expires next February the need of employment will be more pressing.

Among the heavy tax payers in New York City banking institutions are conspicuous. The names include William W. Astor, \$32,496; American Exchange National Bank, \$124,795; Broadway and Seventh Avenue Railroad, \$35,210; Bank of America, \$84,277; Bank of New York, \$49,135; Bank of the State of New York, \$14,000;

Consolidated Gas Co., \$283,578; Chemical National Bank, \$85,050; Corn Exchange Bank, \$30,000; Fourth National Bank, \$69,543; Gallatin National Bank, \$31,000; Importers' and Traders' National, \$66,813; Mechanics' National, \$46,832; National Bank of Commerce, \$148,881; National Park Bank, \$40,600; Union National Bank, \$32,000; William H. Vanderbilt, \$24,000.

The Knights of Labor at St. Louis notified the Missouri Car and Foundry Co. that they must furnish no further supplies of nuts, bolts, coupling-pins, links, &c., to the Missouri Pacific Railroad Co. The Car and Foundry Co. replied that the demands upon them could not be acceded to, and at last accounts it seemed probable that a sufficient working force would stand by the concern.

The affairs of E. Remington & Sons, of Ilion, have been placed in the hands of Addison Brill and A. H. Russell as receivers. A Utica telegram says: "The suspension has been inevitable for a long time. When the Remingtons had large contracts for arms everybody made money and spent it freely, making no provision for a rainy day. The manufacture of sporting goods, the agricultural works, and the type-writer factory enabled them to live long, but times have been by no means prosperous. The liabilities of the concern are about \$1,000,000, mostly in paper. Only about \$12,000 is in judgments. For years the firm has never had a pay day, and men got their wages in orders on the concern. The merchants took these orders in payment for goods, and when they had a sufficient amount they exchanged them for the Remingtons notes, which were frequently renewed and have accumulated until now they aggregate about \$300,000. There were 800 men employed in the works, and the majority, if not all of them, have been paid during the last four or five years in orders only, and have not seen a cent of money. The out-of-town creditors are iron, brass and coal dealers. The plant is valued at \$1,500,000, though it inventoried last January at \$2,000,000. Philo and Eliphalet Remington have made individual assignments to Charles Harder, of Ilion.

Since the Genesta's visit last summer there is a perceptible boom in steam yachting, and quite a number of vessels have been ordered from our builders.

Sutton & Co., of New York, state that the rate of freight on hardware and other dry merchandise by the Dispatch Line ships to San Francisco will be 37½ cents per 100 pounds weight until further notice.

Labor disturbances in England prejudicial to the employer, particularly the agitation designed to shorten the hours which constitute a day's work, have tended probably more than any other cause to build up competitive markets. Germans are quick to take advantage of any favoring circumstance, the workmen seeming to share in the ambition to produce a finished article at a low cost, looking to the ultimate benefits to the trade at large rather than to considerations having more immediate reference to personal care and comfort. At the Wolverhampton Chamber of Commerce quite recently the acknowledgement was frankly made that Germans were pressing England not only in her colonies, but in the home markets, with a class of goods comprising locks, hammers and a variety of edge tools, as well as with the coarser products of industry, such as iron, steel, wire, girders, &c. Interference with the employers' methods and management sometimes, like two-edged tools, cuts both ways.

The consul for Peru in New York makes public a decree of his Government dated March 18, relating to the duties of consignees, the masters of vessels, &c., particularly as relates to certified documents, certain formalities being insisted upon, under heavy penalties.

Reports lately received from China are to the effect that an English, German and Chinese syndicate has entered into a contract with the Mexican Government, agreeing to send 600,000 Chinese to Mexico within the next 12 months, and that the Mexican Government had agreed to give each Chinaman 20 acres of land on the Pacific Coast. That a scheme of this character has been favored in Mexico seems probable, though but little definite information on the subject is available. The idea attributed to its promoters is to erect a barrier to the influence of the United States.

The opening of navigation on the St. Lawrence River and the canals is the signal for a heavy forward movement in grain. The Dominion Government at Ottawa has promptly announced a reduction of 18 cents per ton on the Welland Canal and 13 cents on the Lachine Canal, leaving 2 cents the through rate. The cargoes of grain afloat from Chicago alone exceed 5,000,000 bushels, to which Milwaukee adds 1,200,000, not to speak of large quantities en route from Detroit, Toledo and Duluth. As the Buffalo elevators have an aggregate capacity of less than 6,000,000 bushels and are already one-third full, a glut is looked for, with claims for demurrage.

Coal Market.

The Anthracite Coal market is firm, and some of the wholesale jobbers speak of receiving fully as many orders as they are will-

ing to accept in the present disturbed condition of the labor market. It is even suspected that the demand for Coal is not altogether natural, as rumors of a possible strike among miners throughout the Anthracite region have gained wide currency, and consumers may wish to secure themselves beyond contingency. As to a strike, the Coal companies have no definite information; in any case, contracting parties are released under the usual terms of agreement where the circumstances such as here contemplated made delivery impossible. Aside from stove sizes, such as Lump and Pea, the market is dull. We quote: Broken and Egg, \$3.15; Stove, \$3.50; Nut, \$3; Pea, \$1.75 @ \$1.85—all White Ash, either hard or free-burning. Special Coals, as usual, are sold at higher figures.

Imports.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending April 28, 1886:

Hardware.	Order.
Bailey Wringing Co. Machines, cs., 2	Fig. tons, 1225
Baker Hermann & Co. Hardware, cutlery and guns, pkgs., 62	Spiegel, tons, 900
Drexel, Morgan & Co. Arms, cs., 15	Rods, bbls., 5772
Cases, 30	Wire rods, pkgs., 2695
Field Alfred & Co. Cutlery, cs., 4	Rings, 36
Packages, 5	Tubes, 39
Anvils, 25	Spiegel, cks., 78
Cases, 3	
Gerard Otto Bundles, 492	
Godfrey Chas. Mide, cs., 3	
Gurney F. B. Case, 1	
Hartley & Graham, Mide, cs., 18	
Hoadley & Co. Case, 1	
Johnson John & Co. Mach'y, pkgs., 5	
pcs., 6	
Laing & Bourman, Machinery, case, 1	
Laur C. F. Case, 1	
Loyd & Magnus, Case, 1	
Mark & Co. Cases, 19	
McLaughlin's Sons J. Mach'y, cs., 12	
Newton & Shipman, Files, cks., 2	
Rosenthal J. & Co. Pkgs., 10	
Stone & Downer, Mach'y, cs., 2	
Smith & Fudger, Cutlery, cs., 3	
Sellers W. B. Cutlery, cs., 2	
Sanderson & Son, Broken axes, box, 1	
Spelman W. B. Case, 1	
Schweizer, Dally & Gates, Guns, cs., 2	
Cases, 5	
Schulze & Ruckgaber, Gun barrels, 17	
Steglich & Balke, Cases, 12	
Sutro Bros. Machinery, part, 1	
Taylor Thos. Cases, 3	
Wallach Willy, Cases, 5	
Wiebusch & Hilger, Anvils, 225	
Pkgs., 24	
Witte John G. & Bro. Cutlery, cs., 16	
Wolf H. & Co. Case, 1	
Order.	
Machines, cs., 12	
Mach'y, pkgs., 14	
Pkgs. for Port Lomon, 157	
Cases, 4	
Iron.	
Begg J. & Co. Boat, 1	
Baring Bros. & Co. Bars, 10,552	
Wire rods, coils, 771	
Rods, bbls., 4041	
Ore, tons, 206	
Ore, kg., 587,000	
Bbls., 3101	
Brockner, Evans & Co. Wire net'g, rolls, 504	
Bureau of Ordnance, Tel. cable, drum, 1	
Coddington T. B. & Co. Sheets, pkgs., 391	
Crocker Bros. Ferro. iron, lot, 1	
Spiegel iron, tons, 150	
Henderson Bros. Fig. tons, 259	
Lillienberg N. Fig. pcs., 10,122	
Lough G. F. & Co. Old iron, cks., 24	
Mason J. W. & Co. Wire rope, pkgs., 3	
Castings, 13	
Cylinders, 18	
Naylor & Co. Spiegel, tons, 130	
Nail rods, bbls., 350	
Rivet rods, cs., 790	
Perkins C. L. Spiegel, tons, 850	
Plock & Co. Bars, 6219	
Cases, 2534	
Bbls., 1129	
Stetson Geo. W. & Co. Fig. tons, 100	
Upton, Walton & Co. Wire rope, coils, 2	

The imports at this port of Cutlery, Hardware and Metals for the week ending April 23 were as follows:

Quantity.	Value.
Brass goods.....	36 \$2,822
Bronzes.....	30 1,101
Chains and anchors.....	14 1,145
Clocks.....	33 2,378
Copper.....	11 54,691
Cutlery.....	112 34,108
Dutch metal.....	5 629
Guns.....	32 4,143
Hardware.....	30 3,143
Iron, pig, tons.....	1,272 18,030
Iron, sheet, to lb.....	21 1,490
Iron, spiegel, tons.....	1,780 28,247
Iron, other, tons.....	1,601 36,738
Lead, pigs.....	734 3,308
Machinery.....	39 3,889
Metal goods.....	400 40,005
Nails.....	2 261
Needles.....	26 9,046
Nickel.....	26 9,065
Old metal.....	2 7,005
Pistons.....	8 610
Percussion caps.....	39 4,320
Pins.....	800 91,809
Quicksilver.....	215 10,442
Regina antimony.....	28 2,480
Saddlery.....	81,755 88,979
Steel.....	8,298 88,812
Tin, bxs.....	123,578 123,578
Tin, 6,097 slabs; 500,264 lb.....	1,134 8,781
Wire.....	

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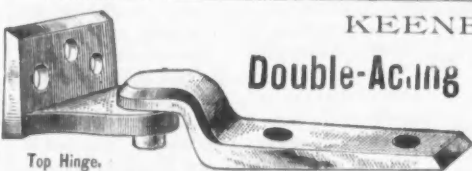
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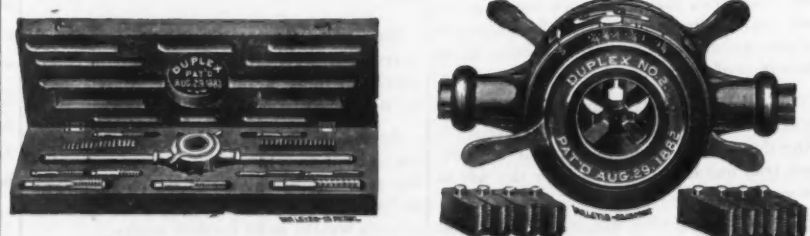
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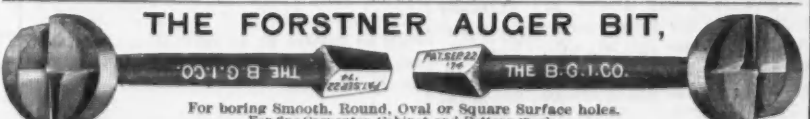
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MECHANICAL.

Pile Driving.

Referring to the question often asked, What is the force of a blow? the London Engineer says:

We shall assume that the blow with which we have to deal is caused by gravity, and that it is due to the arrest of a falling weight, such, for example, as the monkey of a pile driver. It is clear that if the monkey were employed to raise 1 ton through a height of 4 feet it must exert a force or push of 1 ton throughout the distance 4 feet. If it did not it would not move 1 ton at all, for it would be overbalanced. If it were called upon to raise 4 tons through a height of 1 foot, then it must exert a push of 4 tons through a distance of 1 foot. If to lift a weight of 48 tons 1 inch, then it must exert a push of 48 tons through a distance of 1 inch, and so on. Bearing this in mind, there will be no difficulty in understanding the following simple rule: The force of a blow is measured by dividing the whole distance x passed through by the monkey before impact by the distance y passed through after impact, and multiplying the weight by the quotient. Thus, let the monkey weigh 1 ton, let the fall x be 48 inches, let the pile descend 1 inch y at each blow, then the force of the blow—or, in other words, the push or effort exerted by the monkey on the top of the pile—will be

$48 = 48$, and $48 \times 1 = 48$ tons. If the fall

was 20 feet, or 240 inches, then the effort would be 240 tons, and so on. It must be understood that this is the mean or average force of the blow. Its initial effort may be much greater and its terminal effort may be much less, because at the instant of impact the monkey is moving at its full velocity, while at the moment when the pile ceases to descend it will have no motion at all, and consequently will exert no push except that due to its weight. With this aspect of the question, however, the student need not now concern himself. It will be seen that the force can be varied by altering either the distance passed through before or after impact. For example, the monkey weighing 1 ton and falling 48 inches, let the pile descend only $\frac{1}{4}$ inch, then $48 \times 8 \times 1 = 384$ tons, and this leads to an important deduction. If y becomes infinitely small the force of impact will become infinitely great. We are led thus to the ancient problem, If an irresistible force encounters an insurmountable obstacle, what will happen? No such condition can by any possibility occur in practice. Some movement must take place after impact.

If our readers have followed what we have said, they will see that to ask how to calculate the force of blow, giving only the weight and the fall, is to put an absurd question. Three factors are in all cases necessary, namely, the weight, the height of fall and the distance through which the body which receives the blow moves. In practice it is by no means easy to ascertain the latter with precision, and the energy in the falling body can be expended in more ways than one. For example, when the head of a pile is struck, two effects take place simultaneously—the monkey is shortened and so is the pile. The elastic rebound of each immediately takes place, and the monkey jumps up from the top of the pile. Again, the top of the pile becomes highly heated. In very dry weather the top of a pile has been known to take fire under the blows of a light monkey rapidly repeated. The elasticity of the pile plays an important part in influencing the rate of its descent. A monkey weighing 100 pounds, falling a height of 50 feet, will have stored in it on impact $50 \times 100 = 5000$ foot-pounds, and if the progress of the pile were 1 inch its driving force would be $600 \times 100 = 60,000$ pounds. A monkey weighing 1000 pounds, and falling 5 feet, would also have 5000 foot-pounds of work in it, and would exert a driving force of 60,000 pounds over a space of 1 inch; but it does not follow that the former would be equally effective in driving the pile. On the contrary, the lighter monkey striking the pile with a higher velocity might be much less efficient of the two, because the force of the blow would not be transmitted through the pile, but would be expended in compressing the top of it, probably in shattering the wood. We do not propose to go here into any questions concerning modulus of elasticity, which would only serve to complicate a statement which we desire to keep so simple that it may be understood by those who only possess the most elementary mathematical knowledge; but this article would, on the other hand, be manifestly incomplete if we did not say something further concerning the respective values of light and heavy monkeys and hammers, and high and low falls.

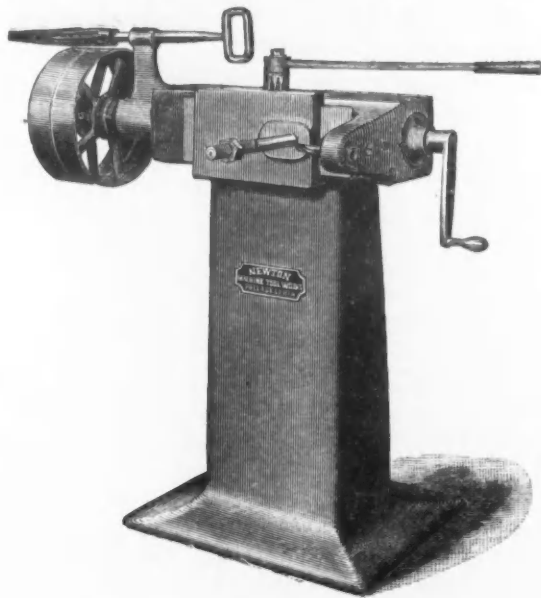
When a pile is struck on the top, what is known as a "wave of compression" passes through it, and this wave requires time for its passage. Such a wave is set up in all columns when stress is suddenly brought on one end. Thus, for example, if the muzzle of a fowling piece containing a column of air is plugged up with a cork, or with snow or mud, the barrel may be burst when the weapon is fired, simply because, while the pressure at the muzzle is yet too small to move the cork, the pressure at the breech end is great enough to burst the barrel. The wave of compression will not reach the muzzle till the breech has been burst. In the same way the detonation of a lump of dynamite on a rail will break it, the action being so sudden that the wave of transmission of pressure has not time to pass through the air surrounding the dynamite, and the air really plays almost the same part as a block of steel round the explosive. The effect of a heavy ram falling a short distance on a pile-head resembles a push in a sense, and gives time for the transmission of the effort throughout the whole pile; but when a light monkey falls the effect may be confined to the top of the pile, which is shattered. In order to make this quite clear we must take into account the element time, concerning which we have said nothing yet.

The velocity with which a monkey strikes a ram is calculated by extracting the square root of the high of fall in feet and multiply-

ing it by 8. Thus, let the monkey fall 4 feet; the square root of 4 is 2, and $2 \times 8 = 16$ feet per second. If the monkey fall as stated in our last example—50 feet—then we have 7 as the nearest whole number square root, and $7 \times 8 = 56$ feet per second as the velocity with which the monkey would strike the pile. If this speed was greater than that at which the wave of transmission could pass through the pile, then little or no effect would be produced in the way of causing its descent; nearly the whole of the work would be done in compressing the top of the pile or in shattering it, and the driving effect would be nil.

Pulley Hub Drilling and Tapping Machine.

We show in the annexed cut a new tool for drilling and tapping the hubs of pulleys for set-screws, designed and built by the Newton Machine Tool Works, of Philadelphia, Pa. Machinists who have had many



PULLEY HUB DRILLING AND TAPPING MACHINE.

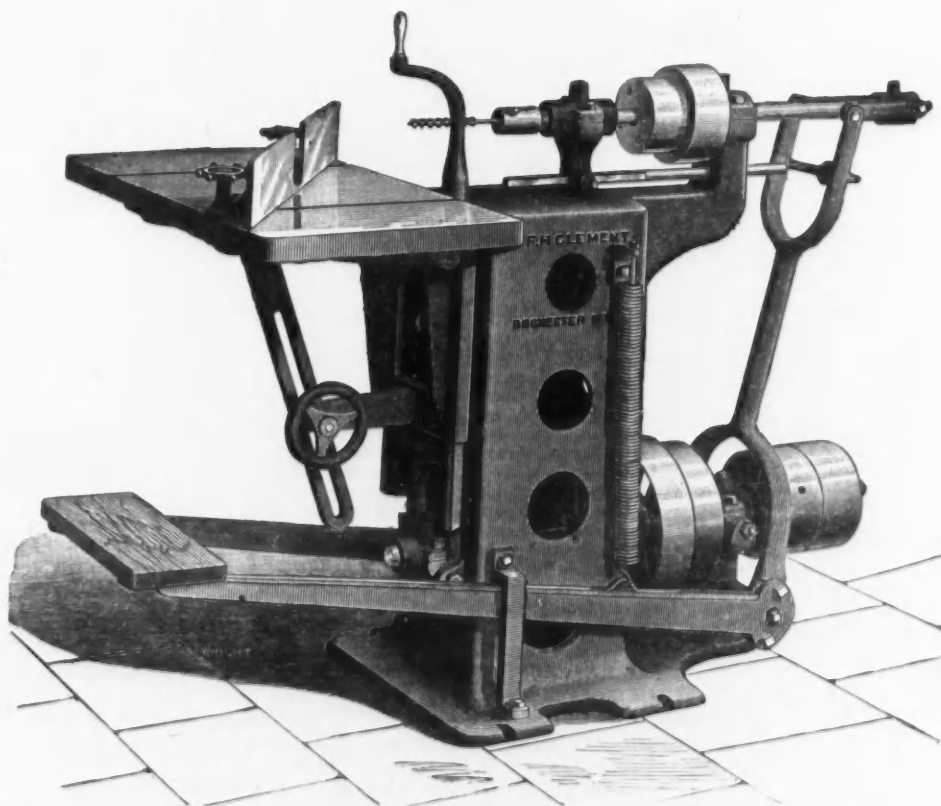
Made by Newton Machine Tool Works, Philadelphia.

pulleys to fit with set-screws know what an annoyance it is to place the pulley under the drill press and use a long, slender drill to drill first through the rim before reaching the hub, and what a trouble it is to hold the pulley in the proper position, or, still worse, angling the pulley and fitting the set-screw in at an angle. The machines of this description heretofore on the market were what might be termed a luxury, and only machine shops which had enough work to keep a machine busy could afford to buy one. While the workmanship on this tool is of the usual high order of all machine tools built by this firm, the design reduces the cost of the machine so that it brings it within the limit of all machine shops needing a machine for this work. Pulleys from 12 to 60 inches diameter can be drilled and

boiler is fired up, without tearing themselves to pieces. This is one of the most difficult things to guard against that is met with, but it can be successfully met if due care is exercised in designing and executing the work. After long use, however, any wall of masonry exposed to intense heat will become shaky; this is unavoidable from the nature of the materials used, and when a boiler setting attains this condition it should be at once relaid. When a setting is full of cracks the loss of heat and efficiency through leakage of air is greater than is generally supposed.

New Horizontal Boring Machine.

We show in the annexed cut a tool recently put upon the market by Frank H. Clement, of No. 131 Mill street, Rochester, N. Y., which



NEW HORIZONTAL BORING MACHINE, MADE BY F. H. CLEMENT, ROCHESTER, N. Y.

tapped. The pulley is placed on an arbor and held by means of two cones and blocked up with washers to bring it in position. It is fed up to the drill by hand. While tapping, the tap can be operated by hand or power, thus avoiding the breaking of taps so common where power only can be used. A counter-shaft is not supplied, as the machine can be placed in a convenient position under the line shaft. Three taps and drills, two cones for holding the work, and the necessary washers, are furnished with each machine.

Boiler Settings.

As a general rule the simpler the design of a boiler setting the more efficient and durable it will be found in actual practice. The walls as recommended in the locomotive should be laid up with good hard-burned bricks with close joints. The furnace should be lined from the front end to a short distance back of the bridge wall with fire-brick laid in a thin fire-clay paste, just enough of it should be used to fill up the inequalities of the bricks and give them a good bearing. This lining should begin a few inches below

the grate and extend up to where the setting is closed in to the boiler shell. Where it can be afforded, the entire surface of the setting exposed to fire may be lined with fire-brick with excellent results, but it is not absolutely necessary. The grate surface should be from one-fourth to one-fifth of the heating surface of the boiler, and the tops of the grates should, under ordinary conditions, be about 2 feet from the lowest point of the boiler shell. This gives ample room for combustion with any ordinary fuel, and more than this is detrimental, for the further the fire is from the boiler shell the less will be the intensity of the radiant heat, a very important thing. The writer does not believe in any sort of a detached furnace arrangement, except in special cases. They have uniformly proved themselves failures wherever they have been tried, which is what might naturally be expected. Setting walls should be so designed that they will have a chance to expand when the

Bursting of Emery-Wheels.

Mr. T. Duncan Paret contributed to a recent number of the *Scientific American Supplement* a long and interesting article on "Solid Emery-Wheels," from which we take the following:

It is the manifest duty of users of emery-wheels to employ all reasonable methods to insure the safety of their wheels. No wheel should be used which is not safe without special mechanical aids or re-enforcements. One exception only we note, and that is in the case of very thin wheels. Wheels of $\frac{1}{4}$ inch and less in thickness, which are perfectly adapted to stand the regular speed without bursting, are yet liable to be broken by side pressure. It is perfectly proper, therefore, when $\frac{1}{4}$ or $\frac{1}{2}$ inch wheels are used, to employ flanges of metal or wood, or of both, wide enough to cover the greater part of the diameter of the wheel. But such use should not lead to any mistake as to the proper function of a flange or to an unreasonable reliance upon it. In the case indicated above, the object of the flanges, which cover nearly the whole sides of the wheel, is not to hold the wheel in and keep it from flying from its center, but to keep it from getting broken by side pressure. It is advisable to discountenance the use of wide flanges on all but very thin wheels, as the use of wide flanges leads to a confidence which is utterly unwarranted. In the earlier years of this industry the belief was a prevalent one (and still exists to some extent) that flanges were a great safeguard, because they would hold the pieces of a wheel in if it should burst. How untrustworthy such a reliance would be can easily be understood by a mechanic who takes the trouble to actually figure the force involved in the explosion of a wheel running at the rate of a mile a minute, or by any ordinary workman who has seen such explosions or their effects.

The Tanite Co., of Stroudsburg, Pa., have for their wheel-testing room a regular bomb-proof. This is a semi-detached building with walls from 4 to 3½ feet thick, of unusually large stones. Upon these walls, and covered by an ordinary shingle roof, lies a false roof of huge oak logs laid side by side as closely as the space will allow, and these logs are covered and weighted down by a mass of huge bowlder stones hauled from the surrounding fields. Within this bomb-proof stands the testing machine, run by a belt which passes through a narrow fissure in the rear wall to a counter-shaft protected behind it, and which can be started and stopped by one entirely outside of the bomb-proof. The fragments of bursting wheels have broken the stones as masons' hammers might have done—have cut great gashes in the tough oak logs, and sometimes penetrated and stuck in them. One who sees in this havoc the mightiness of the spent force will realize how little the pressure of an iron flange on the side of an emery-wheel would accomplish if that wheel lacked the cohesion to withstand the centrifugal force.

The proper function of flanges is so to grip the wheel as to prevent it from turning or running loose upon its spindle, and to so fasten it to the spindle that wheel and spindle revolve together. The flanges should not be relied on as an element of safety. This same consideration renders inadvisable,

iron and supposed to be much tougher and stronger. Breakages proved that the temper and toughness of each cowl differed, and that they were not absolutely safe. Cows made of soft sheet steel, arched, banded and ribbed in complicated fashion, were found to be proof against all blows; but these were weighty, costly and unsightly. The ultimate conclusion was that they could not often be used, and that their introduction would arouse among the workmen a dread of wheels which would cause them to demand safety coverings, while the expense of absolutely safe ones would be so great as to practically encourage the manufacture of low-priced and unreliable ones. The reasons which negative the use of flanges and cows as means of safety negative also the use of wire-webbed wheels and of all makes which are advertised to do full work at half-speed.

The results attained by emery-wheels have never been observed with enough of scientific method to determine positively the best working speed. All of the first-class makers unite in advising a speed of about a mile a minute—5000 to 6000 feet—for a point on the face of wheel. We have every reason to believe that many wheels intended to be run at the above speed are run at an actual speed almost double. Whether the doubled speed gives proportionate increase of results has not been demonstrated; but it may be said beyond all question that a wheel will not do as much work at 2500 feet as at 5000, and the claim of full work at low speed is intended to secure the introduction of wheels which would not be safe at 5000. We have said that one cause of the increased safety of emery-wheels was the greater familiarity with their use. One who considers carefully the ordinary conditions of use will appreciate the necessity of only using such wheels as offer the maximum of safety. Every wheel without exception is a thing which may explode with terrific force if too high speed causes a breaking strain. In model factories, with superb engines, heavy fly-wheels, perfect steam governors, scientific superintendents and first-class belting, known and uniform speeds may be depended upon; but in thousands of places where emery-wheels are run the conditions are those of uncertainty and variability. To begin with, many men—even foremen in large shops—do not know how to calculate the speed of counter-shafts when they have as factors the speed of engine, water-wheel or main shaft and the diameter of pulleys. Therefore many grinding machines are mounted by guesswork, and the grossest errors made.

The surest safeguard against over-speeding is the testing of the very spindle which carries the emery-wheel with a speed indicator. These can be bought for a few dollars, and are sure, reliable, simple and easy of application. But errors may occur even then. The spindle may be timed when the average amount of machinery is attached to water-wheel or engine, and in this case the average speed might be shown. But governors do not always respond quickly, especially those of water-wheels, and the quick throwing out of gear of heavy machinery and slow action of governor may result in a very sudden increase of speed in the emery-wheel to a point far beyond the maximum.

Collapsing Pressures for Tubes.

From a report issued by the British Board of Trade a short time ago, relating to the explosion of a feed-water heater, we take the following particulars: "The heater was formed by giving the lower part of a wrought-iron chimney which carried off gases from two Siemens regenerative gas furnaces an annular form, one tube being riveted inside another and the space between filled with water. This chimney feed-water heater was connected to a 7-inch water main, but it had not been quite finished. An escape-pipe for preventing the accumulation of pressure had not been fixed, and a temporary test cock had been used instead for the few days it had been at work. If the escape-pipe had been fixed the heater would have been an open annular tank, but not being finished the heater was a closed vessel, and when the water-supply cock was closed pressure could accumulate. Both things happened, and the inner tube, 19 feet long, 31 inches diameter and 0.3125 inch thick, collapsed. The report gives the pressure that would collapse the tube, assuming it to be covered with water and as much out of the circular form as long tubes generally are, approximately from the following

formula: $\frac{375.023 \times T^3}{L \times D} = P$, where D = the diameter in inches, L = the length in feet, P = the collapsing pressure in pounds, T = the thickness in inches, or as about 64 pounds."

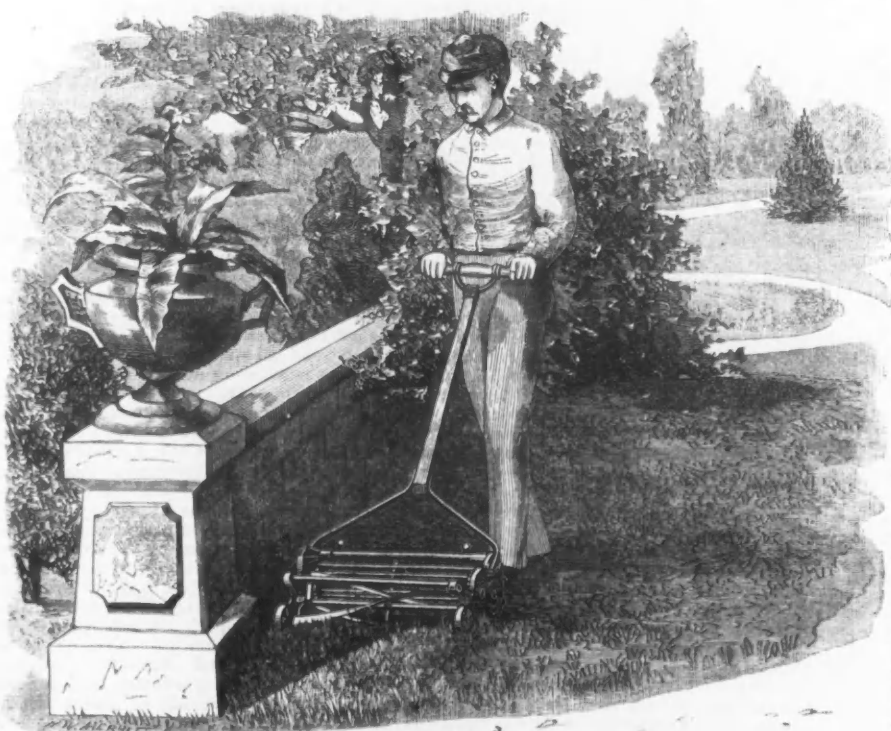
Small Saw Teeth.

Speaking of small saw, teeth, the Boston Journal of Commerce says: "The smallest teeth for a circular saw are not cut on the smallest saws. The saws for cutting rails by the abrasion process have no teeth at all other than those formed by the particles of the saw plate. The saws for slitting gold pens are less than $\frac{1}{8}$ inch in diameter, but they have quite a respectable tooth to work with. The smallest saw we ever used was less than $\frac{1}{2}$ inch across it, and was used for sawing veneering where the saw arbor rested on the work. The feed rolls would not admit of a larger saw, as a knife edge was intended to be used instead, but the cut from the knife would form side cracks whenever the work was dry, which would show badly when the thin stock was bent. This saw would remove, in the form of fine cuttings, what the knife was obliged to crowd to one side, and relieve the tendency of the saw to follow in the grain of the veneering; but where toothless saws are used they are driven with great speed and they require a large amount of power to drive them."

The large brick-roof store Nos. 512 to 516 Broadway, occupied by dealers in silk, clothing, &c., was discovered to be on fire in the fifth story. Being filled with suffocating smoke, it became necessary to penetrate the roof. After much delay the fire was over come, but the losses are estimated at near \$600,000.

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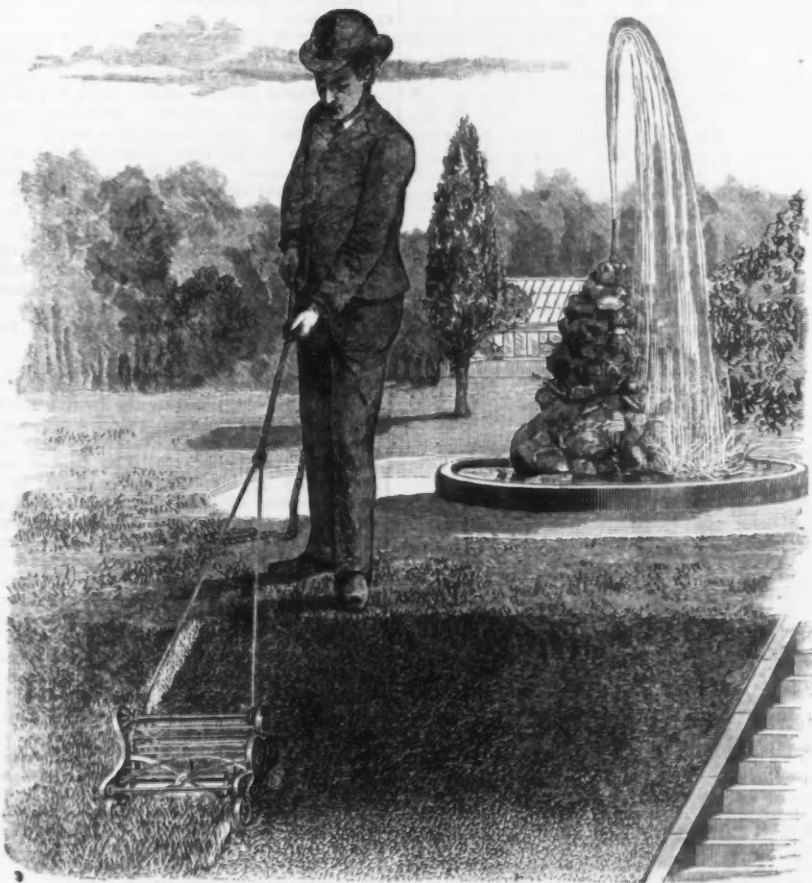
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Do you want to handle the Lightest Running, Easiest Cutting, BEST SELLING Lawn Mower in the market? If you do, examine carefully the merits of the "NEW EASY," and you will know what Mower to buy. No Lawn Mower has yet been made that approaches so near to the ideal Machine for every kind and variety of work as the "NEW EASY." It stands pre-eminent and alone as the only perfect Mower manufactured, and combines the characteristic and exclusive advantages of the front-cut, traction-roller style of machine—viz., adaptability to every grade of lawn work, with extreme ease of operation.



SPECIAL ADVANTAGE, No. 2.

The "NEW EASY" is the *only* Lawn Mower that will run off its level and cut low terraces, mounds, flower beds, &c. (See above cut.)



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The "NEW EASY" is the *only* Lawn Mower with sufficient traction to cut high terraces with rope attachment. (See above cut.)

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We do not advertise the "NEW EASY" as a Field Mower, nor assert that it will cut grass 12 inches high with perfect ease; but for a Lawn Mower, Strong, Durable, Easily Sharpened and Adjusted, of Varied Capacity, Graceful Form, Long and Pleasing Service, and so easily operated that a lady or child may use it without fatigue, we do claim the "NEW EASY" to be without a rival; and our Agents are authorized to sell this Mower with the express guarantee that these claims shall be verified by trial.

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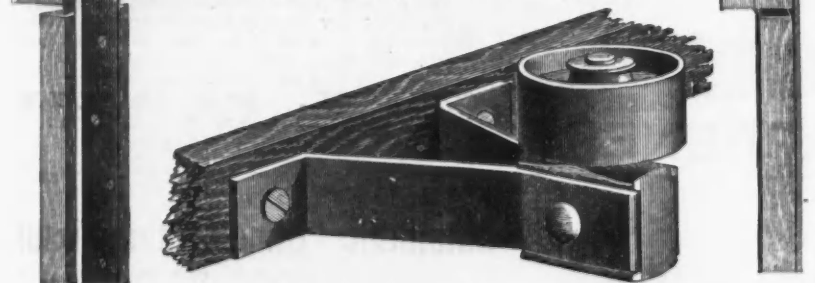
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Curved Blade HOE Double Shank**

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SCIENTIFIC AND TECHNICAL.

The Composition of Air.

Some recent experiments to determine the average composition of atmospheric air have been described to the Académie des Sciences by MM. Muntz and Aubin. This order of researches was initiated by Regnault, who established the mean composition of the air by multitudinous analyses of the contents of glass tubes sent by himself to correspondents in different countries, who opened these tubes, and, after they were filled with the air of the locality, returned them to Paris, where the analyses were made under conditions permitting the attainment of great exactitude. MM. Muntz and Aubin have not been able to improve upon the method of Regnault, but they took advantage of the French scientific mission to Cape Horn to secure fresh samples of air from a locality where it might be supposed to possess a perfectly normal composition. The mean of numerous samples taken under different weather conditions shows the proportion of oxygen to be 20.864 per cent. by volume. The air of Paris, according to two samples taken in a street in July, contains 20.92 per cent. of oxygen. Regnault's determination for Paris air was 20.960, and for all his analyses the maximum and minimum limits were 21.015 and 20.300 per cent. respectively. It may at first sight appear strange that the air of Paris should contain a higher proportion of oxygen than the decidedly fresher locality of Cape Horn. The experimentalists are careful to state, however, that their system of analysis has its limits, and too great importance should not be ascribed to minute decimal proportions. They content themselves with drawing the general conclusion that the chemical composition of air is practically the same with regard to oxygen everywhere, but that slight variations of this composition may be detected from time to time.

A Curious Phenomenon.

A curious phenomenon has been observed by M. Blondlot and communicated to the French Academy of Sciences. A disk of platinum and a disk of copper, 0.03 m. in diameter, were fixed vertically in front of each other by two platinum stands. The disks were 3 or 4 mm. apart, and both were placed inside a bell-jar of porcelain, open below. The apparatus was then heated red-hot for three hours by means of a gas furnace, and, although there was no electric current, it was found that the face of the platinum disk was blackened with a deposit containing copper and platinum. In short, the copper had crossed from the copper plate to the platinum one. M. Blondlot, by repeating the experiment in different gas, found that the nitrogen of the air was the agent in this transport of matter. The nitrogen combines with the copper and lodges on the platinum, either incorporating itself with the latter or decomposing in contact with it under the influence of its high temperature.

Hand-Grenades for Extinguishing Fire.

A number of German savants have been recently engaged in investigations into the manufacture of these new weapons against fire. One of the first grenades put on the market was found to contain some free carbonic-acid gas—under feeble pressure—a considerable sediment of carbonate or bicarbonate of soda and a liquid containing in solution common salt and chloride of ammonium, also some sulphate of ammonium. Since this was made, however, the composition has been simplified, and Dr. Geissler has made the following three analyses. In Hayward's hand-grenade the bottle was found to contain a yellowish, slightly turbid aqueous liquid, containing in solution 15.7 per cent. of chloride of calcium and 5.6 per cent. of chloride of magnesium, with the usual impurities of crude salt. The contents weighed 760 gram—450 gram = 1 pound. In Harden's hand-grenade the contents weighed 555 gram. This was a yellowish, somewhat turbid aqueous liquid, containing in solution 19.46 per cent. of common salt and 8.88 per cent. of chloride of ammonium. In Schoenberg's "Feuertod" the contents weighed 440 gram and was a slightly turbid, almost colorless liquid, containing 1.66 per cent. of carbonate of soda and 6.43 per cent. of common salt. In connection with this subject two formulae are given in the *Pharmaceutische Central-halle* by Dr. Eng. Dietrich. Both are intended to extinguish fire, one by withdrawing or consuming oxygen, the other by coating the combustible objects with a protecting crust. The former, or "dry fire extinguisher," is made as follows: Nitrate of potassium, powdered, 59 parts; sulphur, powdered, 36 parts; charcoal, powdered, 4 parts, and colcothar 1 part. These are dried thoroughly, and then mixed and fitted into pasteboard boxes, each holding about 5 pounds. Through an orifice in the side a fuse or quick match is fixed, which extends some 4 inches inward and 6 inches outward, and fastened on the outside. These extinguishers are intended for closed rooms, and are said to act automatically. Dr. Dietrich says that he has tried them, and has found their effect excellent. The liquid fire extinguisher is made of chloride of calcium, crude, 20 parts; common salt, 5 parts, and water, 75 parts. This solution can be thrown into the fire by a hand pump or in ordinary bottles. The burning portions become incrustated and cease to be combustible. With these receipts persons could very well make their own solutions and keep them in convenient places, together with hand pumps for projecting the liquid.

The Photogravure.

Of all the processes that have been invented for book illustration there is none whose results are more beautiful than those of the photogravure. This process in its perfection is known only to Goupil & Co., of Paris. The photogravure was not invented by a Frenchman, but by an Englishman, the late H. Fox Talbot, who is said to have patented it in 1852 and again in 1858. Mr. Talbot's experiments were necessarily crude, but his results astonished all who saw them. The process used by M. Goupil & Co. is an improvement on the Talbot process patented by M. Rousselon, who describes it as being founded on the discovery of a chemical sub-

stance which crystallizes under the influence of light, the crystals becoming larger the longer they are exposed to it. After exposure it only remains to make a deposit of copper by means of the electric battery on the crystalline surface, and thus a plate is obtained yielding proofs in which every detail and gradation of tone is faithfully reproduced. This sounds simple enough, but it is not so easy to put in successful practice, as many who have tried it and failed can give testimony. Particulars of the process show how much depends upon the dexterity of the operator. A bed of bichromatized gelatine is exposed to the action of the sun's rays through a photographic negative, and is afterward washed in water. The image, after the washing, and when the gelatine has become dry, appears as if formed of a more or less marked grain in proportion to the intensity of the shadows. The gelatine is then firmly pressed against a sheet of metal, which takes the impression of the image which has been formed upon the gelatine. This impression, properly prepared, serves as a mold upon which, by means of the galvanic battery, copper is deposited. As soon as the required thickness of copper has been deposited the plate is finished by cleansing, and by such retouching with the burin of the engraver as may be considered desirable. If the plate be now subjected to the process of steel facing an intaglio printing surface is produced from which a large number of impressions may be made. Each plate is printed by hand, and the greatest care is necessary in its preparation, and this it is that makes the process so very expensive for book illustration. It is generally admitted to be the most beautiful of all the processes known, because it not only gives a perfectly faithful reproduction of the copy, but because its effects of light and shade and the peculiar softness it imparts to the picture are not obtainable by any other art.

An English View of Business Good-Will as an Asset.

As a general rule auctioneers and surveyors value the market price of the good-will of a trading concern at one year's purchase of the net profit, after deducting interest at 5 per cent. on the capital employed in the business. Thus, if the sum required to buy the lease, stock, book debts and plant at a fair valuation as a going concern amounts to, say, £5000, and the net profits, after charging depreciation of lease and plant, amount to £1000 per annum, the value of the good-will would be £750—that is, one year's net profit, less £250, being interest at 5 per cent. on the capital employed. To this rule there are some exceptions, notably in business connected with the liquor traffic, in which, owing to our licensing laws and practice, a quasi-monopoly has been created, not for the pecuniary benefit of the State, but to enrich publicans, brewers and distillers. These exceptions, however, only go to prove the rule, and, judged by it, there is no doubt that some of the companies which have been recently formed to buy existing businesses have paid extravagant prices for good-will. It is not pretended that such prices could have been obtained from a private buyer, but it has been found convenient by promoters to add on their promotion money to the price for the good-will. The promoters have to divide a considerable portion of this sum among syndicates formed to guarantee the placing of the capital in the event of the public not subscribing, and the cost of all this, as well as of the operations instituted with a view to causing the shares to be quoted at a premium before allotment, is tacked on to the purchase money, which is fixed by the vender and promoter.

It is obvious, therefore, that the price paid by the company does not represent the real value of the thing bought, and it is not right to allow the good-will to stand as an asset in the company's balance sheet at the price paid for it. Take the following as an illustration: A company bought a business which netted between £40,000 and £50,000 per annum, after charging interest on capital at 5 per cent. The price paid for the buildings, machinery and good-will was £250,000. The two first items were worth £50,000, so that the good-will cost £200,000, or four years' purchase of the net profit taken at the higher figure. The company, therefore, paid £150,000 more than the fair market price for the good-will. For our part, we look upon this £150,000 as no asset at all, but if it is to be treated in the balance sheet as an asset it is obvious that the company should write it down as soon as possible. A private buyer would extinguish good-will out of profits in three years at most. He would debit profit and loss annually for three years with one-third of the price he paid for good-will. If the company were to prepare its profit and loss account in this manner there would be no dividend for its shareholders, but, looking to the extravagant price it has paid, the very least it can fairly do is to apply one-half of its profits yearly to extinguish the asset good-will from its balance sheet. If the profits were £50,000, and one-half were divided, it would still take eight years to extinguish this quasi-asset from its balance sheet. Anything short of this will lay the directors open to a charge of paying dividends out of capital.

It is well-settled law that a company's capital must be represented by valid assets in its balance sheet before dividends can be legally paid, and even where the articles gave power to directors to pay in effect dividends out of capital this was held to be *ultra vires*, and the directors were made personally liable to repay the money thus illegally distributed. In the case under consideration directors would perhaps try to maintain that the good-will was worth the £200,000 paid for it, and was a proper item as an asset in the balance sheet. But how could this avail if the market price is only £50,000. Taken even at this smaller figure, there is a risk in paying dividends until this so-called asset is extinguished. Assume mismanagement, competition, fall in prices, new inventions, or any of the many risks to which trading and manufacturing businesses are exposed, with the result that instead of a net profit there is a loss in the year's working, where, then, is the asset good-will?

Why, completely extinguished: the £50,000 disappears at once, and it would have to be added to the loss of the year. In short, the truth is that no serious man of business will ever allow the item of good-will to figure in his balance sheet, or in that of any company of which he is a director. It is too evanescent an asset, if it can be called an asset at all. Even when valued in the method here indicated it is liable suddenly to disappear, and it is at all times difficult of realization.

How, then, are vendors of businesses to companies to be paid for good-will, so that this item will not appear in the balance sheet to prevent dividends being legally paid? There are only two ways by which this can be effected. One is by founders' shares, which will entitle the holders to a proportion of the future profits after a certain fixed dividend has been paid to the shareholders. The other way, which is commonly resorted to when private banks are transformed into limited companies, is to allot to the vendors a certain portion of the capital at par, and to offer the remainder to the public at a premium, the money raised by the premium being paid to the vendors for the good-will. The capital of the company is thus kept intact, and the good-will does not appear as an asset in the balance sheet.—*Economist*.

Foreign Markets.

FRANCE.

PARIS, April 15, 1886.—*Metals*.—The fine weather has started business and a satisfactory trade has been done in Metals, with a slight decline in Copper and an advance in Lead. We quote at the close in francs per 100 kg.: Copper, Chili Bars, 110 @ 111.25; Ingots and Slabs, 111.25; Best Selected, 116.50; and Pure Corcoro Ore, 112.50. Tin—Banca, 255; Billiton and Straits, 250; Australian, 251, and English, 247.50. Lead, 34 @ 34, and Spelter, 38.75 @ 39.50. Iron.—People in this city are still awaiting the solution of the great questions which will be the signal for undertaking the long-promised public works. Aside therefrom the iron situation presents nothing new. Our market remains dull and unaltered, flooring being worth 11.50 francs per 100 kg., and Merchant, 12.50. Old Rails are steady at 6.50 francs. In the Ardennes there is a complaint of a lack of orders in the rolling-mill branch, and the hull is availed of by makers for the remodeling of plant, the introduction of new methods and machinery. The general tendency is toward steel manufacturing in the place of iron. The only rolling mill of the region doing a good trade is the Flize, working on domestic orders solely. Foundries are partially idle in the district and are working under difficulties. The Aubrivies Works form an exception both in their Castings department and the building material branch. Orders for the latter begin to drop in from a good many quarters. Coal is dull and without change. —*Moniteur des Intérêts Matériels*.

BELGIUM.

BRUSSELS, April 15, 1886.—*Iron*.—Not much of a change can be reported in the Belgian iron market, but, if anything, it may be stated that the situation has improved generally if we consider the confusion which prevailed but a fortnight ago. The strikes have terminated and work has been resumed pretty much generally. It cannot be asserted, however, that all the territory has been regained which was lost through the cessation of work at the time by the important concerns in the Charleroi basin. It is a positive fact that orders intended for Belgium have gone elsewhere. Meanwhile prices have remained the reverse to strong. We quote Luxembourg Pudding, 3.80 per 100 kg.; do. Foundry, 4. At Charleroi the latter sells at 5.75 and Pudding, 3.80 @ 4.80. Merchant Iron for export has declined to 9.50, No. 1; for Domestic use it is still bringing 25 centimes to 1/2 franc more. Beams fetch 9.25 @ 9.75; angles, 11 @ 11.75. Sheets for export are obtainable at 11.25; for home use at 12.50. No. 2; No. 3, 11.50; Commercial, 18.50; Thin sheets, 20.50, and No. 4, 22.50. We are now evidently on the eve of livelier times; prices have now arrived at such a low level that consumers who have hesitated till now in view of the poor spring trade have every inducement to lay in a supply before the Government commences to spend money on public works and thus comes to the assistance of Belgian iron industry, without speaking of the current of foreign orders for distant countries now setting in, especially for Java and the extreme East. Coal has been moderately active and sustained.—*Moniteur Industriel*.

GERMANY.

HAMBURG, April 15, 1886.—*Iron*.—Our Dortmund correspondent reports a better demand for rolling, greater firmness generally, without leading to an advance so far except in a few articles. Over-production of Pig Iron seems to be at length arrested. In the Siegen district 13 blast furnaces are at present blown out altogether. Puddling Pig has been less active, however. Foundry Pig is still in an unfavorable position; Bessemer has been without further change; at the low prices prevailing Thomas has been quite animated. The Siegen district is still depressed. Spiegel, with 10 @ 12 1/2, is selling at 47 @ 49; Puddling Pig may be quoted 39 @ 42.50; Foundry do., 46 @ 52; German Bessemer, 42 @ 44; Luxembourg, 38 @ 39; Thomas, 38 @ 38.50 francs. Not much of a revival can as yet be reported in rolling-mill products; Merchant is still depressed. Beams begin to look up with the approach of the building season. There is greater activity noticeable in Boiler Sheets, and prices are firmly held. Common Coarse Sheets are also in better request; Thin Sheets are, on the contrary, quite neglected. The tendency of the latter is still downward. A year since they were 14 marks per ton dealer. Wire Rods remain unaltered. Railroad Material has gone very low at late adjudications. Merchant Iron may be quoted 96 @ 99—some works quote 104; Angles, 105 @ 108; Beams, 96 @ 99; Hoops, 106 @ 108; Sheets, 129 @ 143; Steel Rails, 135 @ 145; do., for miles, 92 @ 101. Metals.—Lead has been firmer, Spelter weaker, with less doing. Copper and Tin steady. We quote at the close: German Lead, 14 marks; Lake Copper, 52 @ 55; Silesian Spelter, 14.50 @ 15; Sheet Zinc, 30 @ 30.70; Sheet, Gray, 29 @ 32; do., White, 21 @ 32, and Tin, 194 @ 198 marks, all per 50 kg.—*Gorrenkalle*.

HOLLAND.

ROTTERDAM, April 11, 1886.—*Tin*.—The market has been steady. We quote Billiton, spot, and to arrive, 50 guilders per 50 kg.; Banca, spot, 50.25, and to arrive, 50.125, with but a small business doing. —*Koch & Vlierboom*.

SPAIN.

BILBAO, April 13, 1886.—*Iron*.—Our Iron-Ore market has been dull and unaltered, but freights are lower—4/2 to Cardiff and Newport, 5/6 to Glasgow and 6/0 to Newcastle. Shipments so far amount to 839,798 tons, against 870,144 in 1885 and 842,071 in 1884. Petroleum.—According to a pamphlet just published by M. Th. Toucaut, Petroleum has been traced in Spain at Maesta, near Vitoria; at Soria and Sigüenza, Burgos, Villamartin and Girona.—*Revista Minera*.

AUSTRIA.

VIENNA, April 11, 1886.—*Iron*.—The favorable change of weather has given a sudden impetus to the iron trade and the demand for Hardware and Agricultural Tools and Implements. This activity will have to assume larger proportions, however, and last some time to make up for the late spring season. Machine shops are moderately active in the meantime. Both the Government and private railroad companies have commenced to give liberal orders for rolling stock. We quote toward the close: White Pig, 43 @ 54 florins per ton; Merchant Iron, 117.50 @ 122.50; Sheets, 145 @ 175, and Beams, 100 @ 105 florins. Metals have been moderately active and unaltered.—*Austrian Trade Journal*.

EAST INDIES.

COLOMBO, March 3, 1886.—*Flumbago*.—There has been a steady market; we quote at the close as follows: Large Lumps, £14.10; Ordinary Lumps, £13; Chips, £10, and Dust, £7.5; cost and freight per sailing vessel, 3/ extra if per steamer.—*Folkeart Brothers*.

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We defy any one to produce its equal. The Pennsylvania Lawn Mower Works have now in their possession a 16-inch Pennsylvania Mower which was sold to an institute in this State, which was used nearly every working day constantly from the day it was purchased until they got it in their possession. This mower cut 500 acres of grass, was sharpened but once during use, and, although it has not been sharpened since it came from the ground, nevertheless will cut the finest paper.



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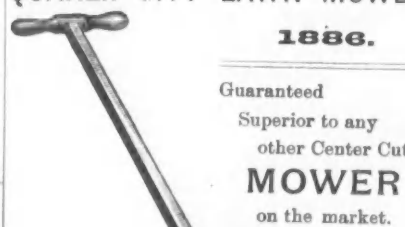
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"QUAKER CITY."

The trade will soon find an ordinary and roughly-made Reel of blades and stationary knife is not all that is required to make a perfect Lawn Mower.

THE QUAKER CITY LAWN MOWER.



Guaranteed
Superior to any
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NOW, WHY BUY A WORTHLESS MOWER?

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DOUBLE GEAR.

The Cylinder Knives are solid cast steel, made by a patented process; are hardened and tempered in oil; self-sharpening and never require a file or stone after leaving the factory. All the bearings are long, so that the wear on the Mower will be slow, and oil seldom required. It is made to run at high speed, and will not only cut higher grass, but leaves the lawn perfectly smooth.

Continental Lawn Mower. 1886.



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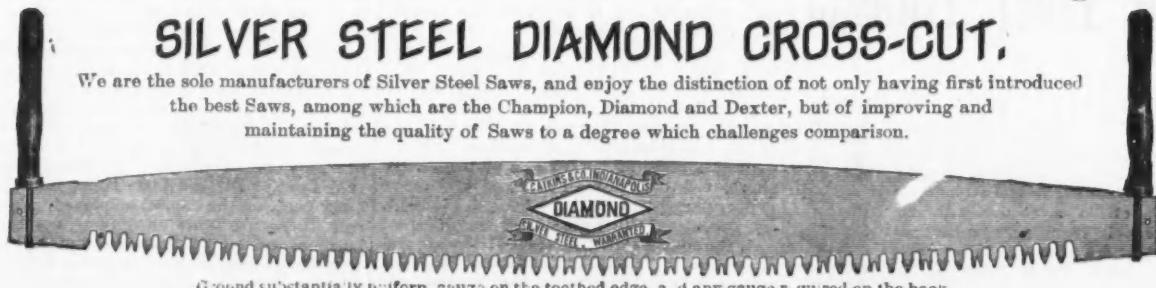
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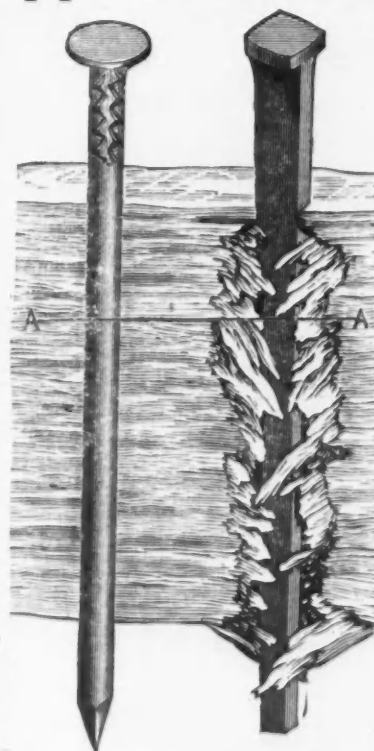
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SOLID EMERY KNIFE SHARPENERS.

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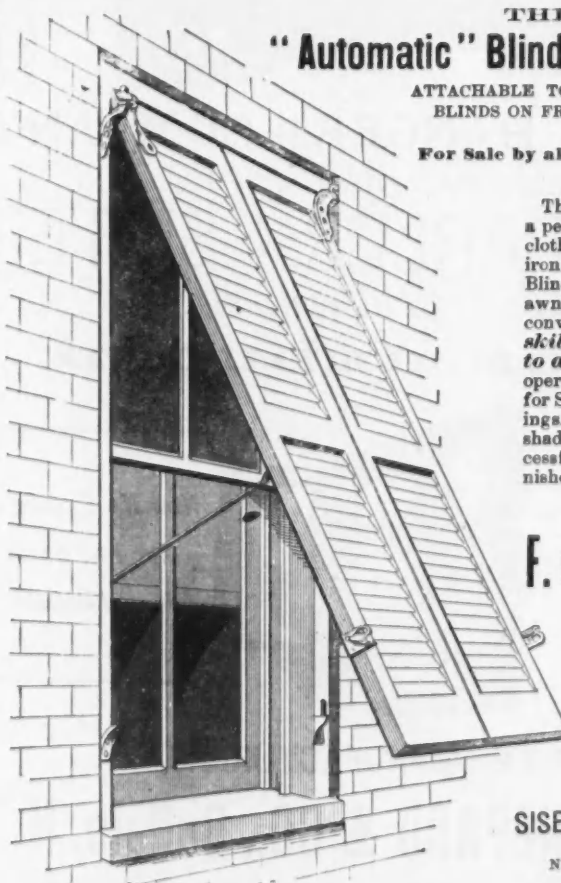
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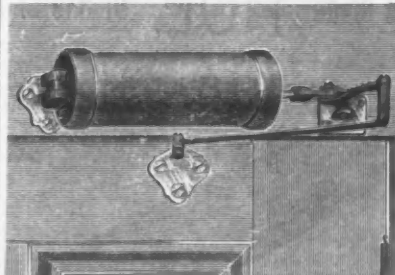
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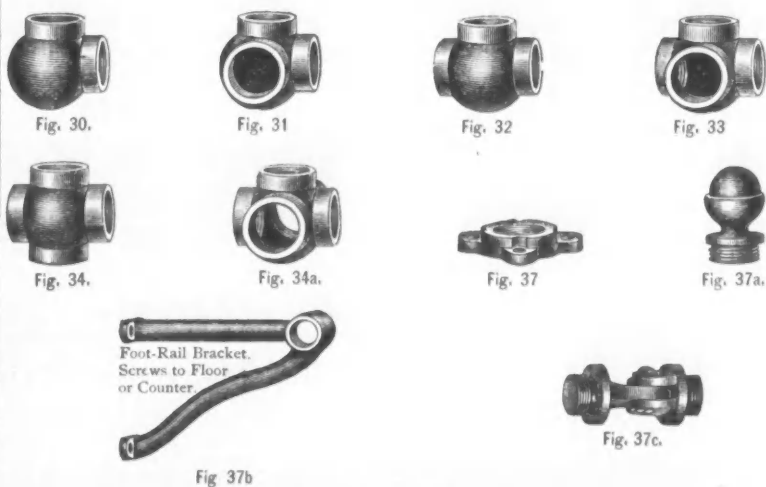
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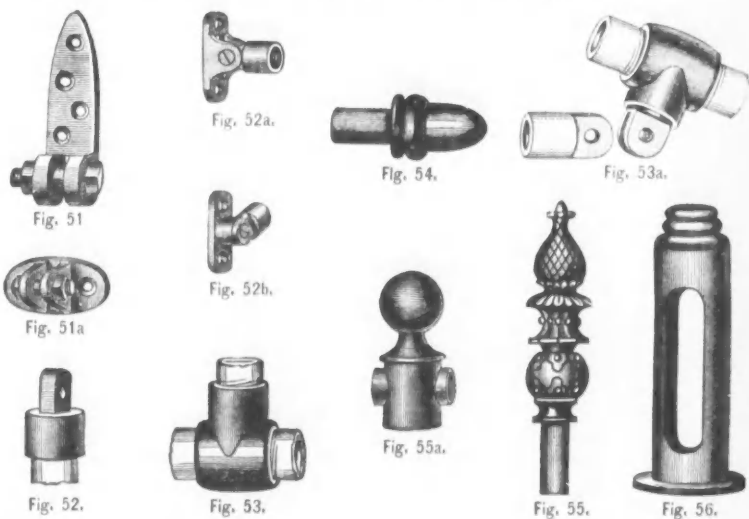
PRICE LIST.

		3/8	1/2	3/4	1	1 1/4	2
Fig. 30. Ell. side outlet.....	each	.10	.15	.20	.25	.35	.45
Fig. 31. Ell. side outlet.....	each	.12	.18	.25	.40	.50	.75
Fig. 32. Tee.....	each	.12	.18	.25	.40	.50	.75
Fig. 33. Tee, side outlet.....	each	.15	.22	.35	.45	.55	.70
Fig. 34. Cross.....	each	.15	.22	.35	.45	.55	.70
Fig. 34a. Cross, side outlet.....	each	.18	.27	.40	.50	.65	.85
Fig. 37. Floor Flange.....	each	.12	.18	.25	.40	.50	.75
Fig. 37a. Acorn Ornament.....	each	.10	.15	.20	.25	.35	.45
Fig. 37b. Foot Rail Bracket.....	each	.40	.50	.70	.80	1.00	1.20
Fig. 37c. Hinge for Pipe Gates.....	each	.35	.40	.45	.55	.60	.70

PIPE SIZE.

IMPROVED IRON AWNING FRAME FIXTURES.

Any Plumber or Gas-Fitter can Erect Awning Frames.



DESCRIPTION.

Fig. 51. WALL EYE.	Fig. 53a. BRACE TEE.
Fig. 51a. HINGE PLATE.	Fig. 54. END ACORN.
Fig. 52. HINGE SOCKET.	Fig. 55. AWNING POST TOP.
Fig. 52a & b. WINDOW BRACKETS.	Fig. 55a. AWNING POST MALLEABLE.
Fig. 53. RAIL TEE.	Fig. 56. AWNING POST BASE.

If you ever have calls for Awning Frames you will find these Fixtures most desirable.

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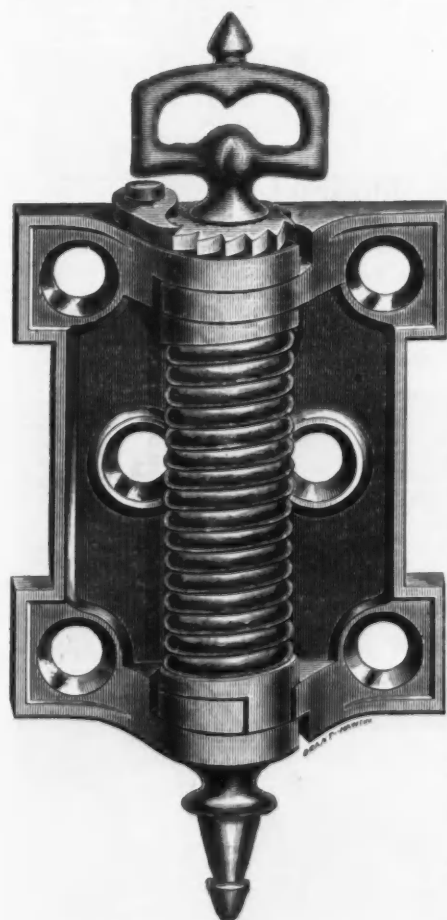
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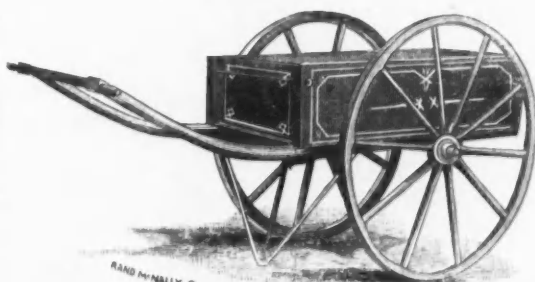
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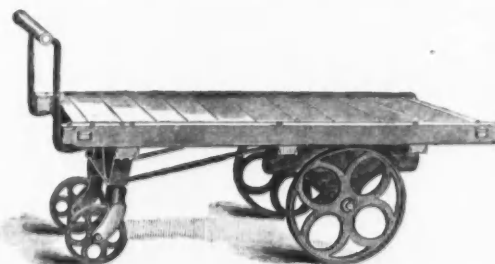
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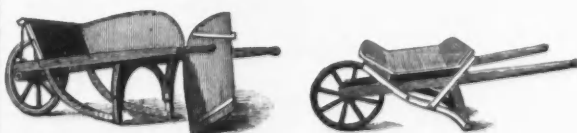


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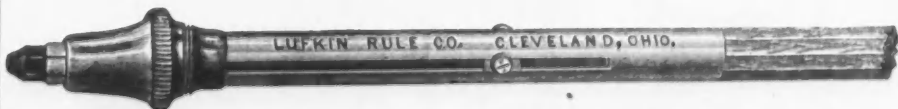
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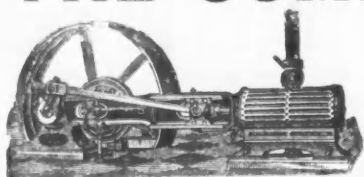
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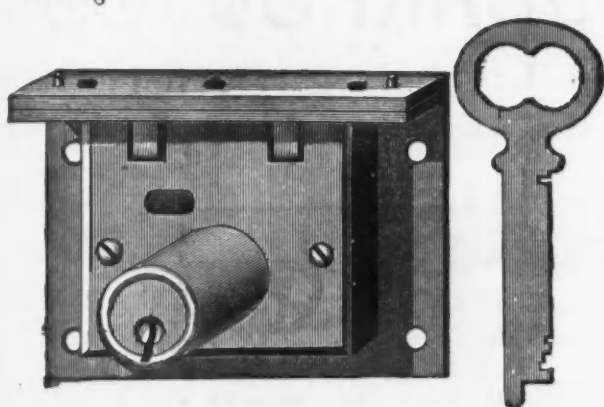
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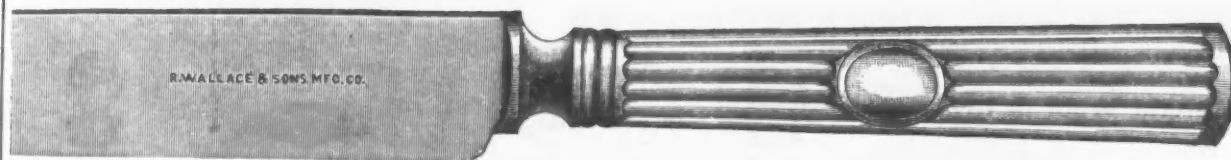
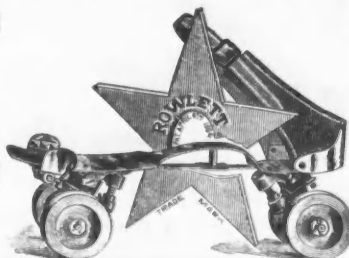


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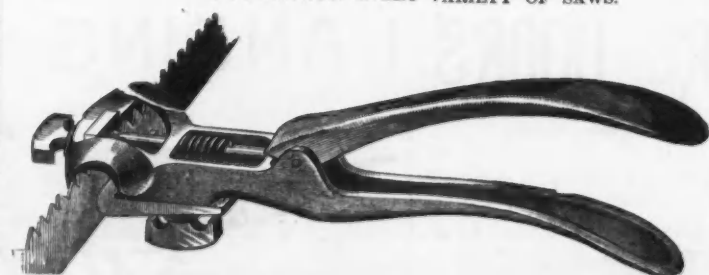
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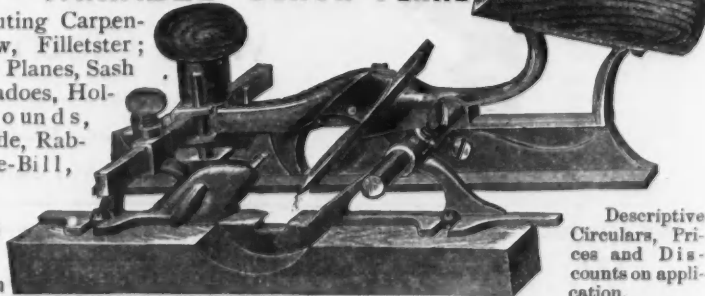


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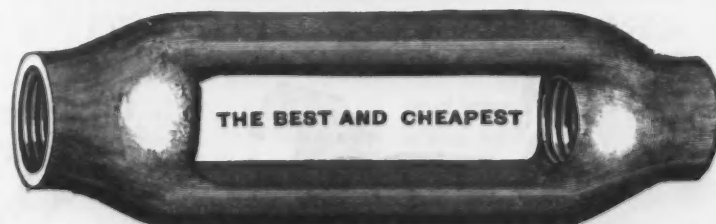
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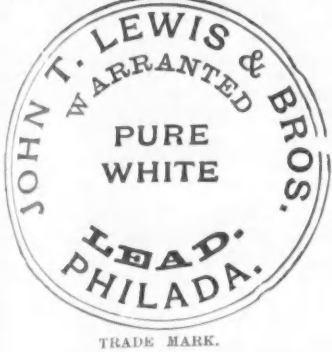
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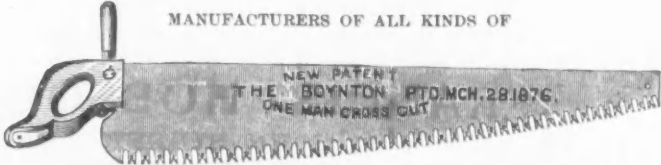
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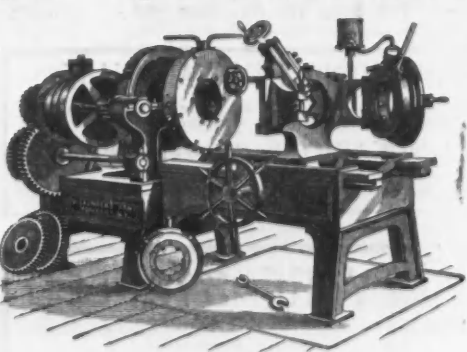
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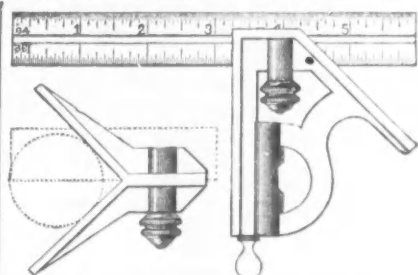
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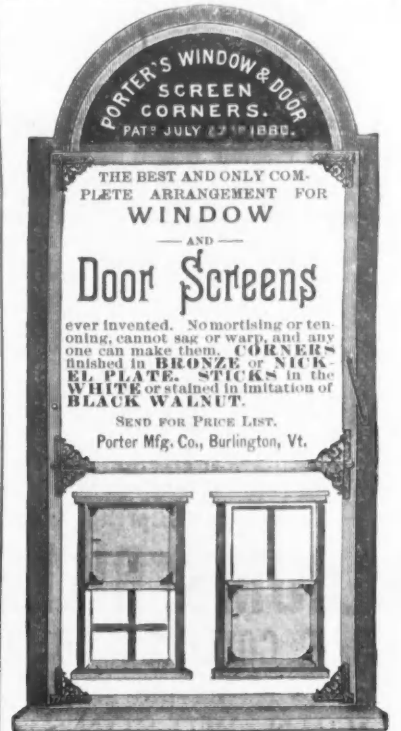
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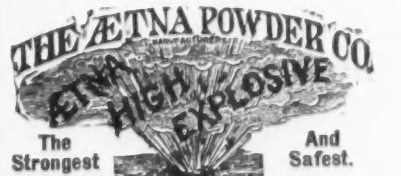


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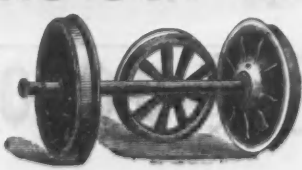
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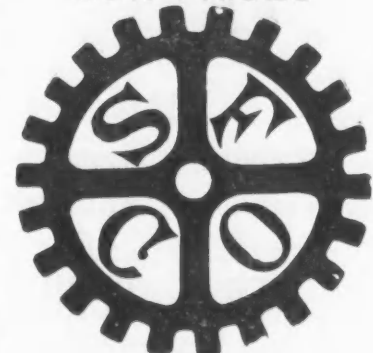


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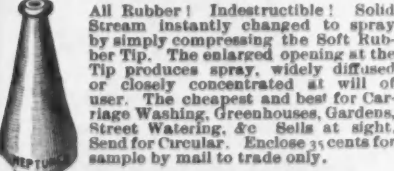


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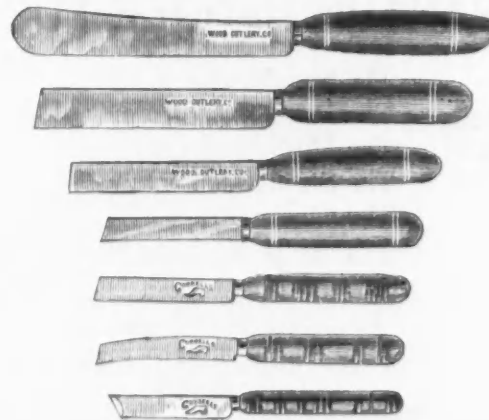
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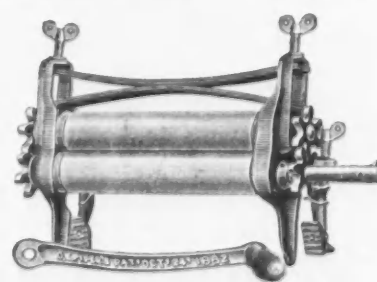
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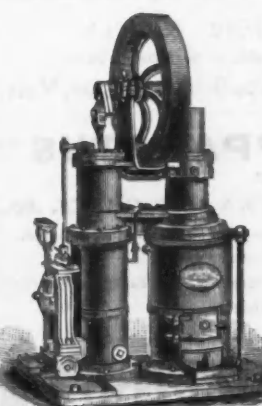
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Malleable and Variety Wood Turning.
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1st. A Lock Faucet that cannot be
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tight.

2d. A Faucet that can be driven
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the top.

3d. Made from selected hard rock maple polished, all metal parts
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Lloyd & Supply Hardware Co.
Terms, 30 days. For 60 or 90 days, interest added at 5 per cent. per annum.

Appl. Pumps. 9% @ 10¢
Trenton, 10¢ @ 11¢
Eagle Axle, American, 10¢ @ 11¢
Apple Pumps. \$5.00 net
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Lots of 10 to 25 dozen, special prices.

Axes.
Hunt's Kentucky and Yankee, 7¢ doz. net.
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Beveled Axes, 6¢ doz. net.
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Augs and Auger Bits. New List January 7, 1886.
Snell's Augers and Bits, 60¢ doz. net.
New Haven Copper Company, 60¢ doz. net.
Jennings' Auger Bits, new list Jan. 1, 1884, 25¢ doz. net.
Cook's Auger Bits and Augers, 15¢ doz. net.
Watson's Ship Augers, 15¢ doz. net.
Bonney's Pat. Hot Augers, list 1885, 40¢ doz. net.
Sears' Pat. Hot Augers, list 1885, 40¢ doz. net.

Balances.
Light and Common, 50¢ doz. net.
Hells.
Hells Bros. Mfg. Co. Light Hand Bells, 75¢ doz. net.
Light Hand Bells, 75¢ doz. net.
Swiss Pattern Hand Bells, 80¢ doz. net.
Connell's Door Bells, 20¢ doz. net.
St. Western & Kentucky Cow, new list, 70¢ doz. net.

Boring Machines.
Upright, without Augers, 15¢ doz. net.
Angular, without Augers, 15¢ doz. net.
Boita, Eastern Carriage Boita, new list June 10, 1884, 10¢ doz. net.
Boita, Carriage Boita, new list, 10¢ doz. net.
Boita, Wrought Shutter, 10¢ doz. net.

Braces. Barber's Improved, 50¢ doz. net.
Barber's Old Style, 50¢ doz. net.
Rackus, Polished, 50¢ doz. net.
Rackus, Nickelled, 50¢ doz. net.
Spotted, 50¢ doz. net.
American Ball, 50¢ doz. net.
Amidon Improved, 50¢ doz. net.
Amidon Corner Brace, 50¢ doz. net.

Butts.
Cast Fast Joint, Narrow, 10¢ doz. net.
Cast Fast Joint, Broad, 10¢ doz. net.
Cast Loose Joint, Narrow, 10¢ doz. net.
Cast Loose Joint, Broad, 10¢ doz. net.
Cast Acorn, Loose Pin, 70¢ doz. net.
Cast Acorn, Loose Pin, 70¢ doz. net.

Blind Butts.
Parter, 75¢ doz. net.
Clark, 75¢ doz. net.
Shepard, 75¢ doz. net.
Lull & Porter, 75¢ doz. net.
Butler's, 75¢ doz. net.

Casters. Bed (new list July 1, 1880) Plate, 10¢ doz. net.
Chains. German Halter and Coll. list June, 1884, 50¢ doz. net.
Best Proof Coll Chain, English, 50¢ doz. net.
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Chisels. Socket Frame, 10¢ doz. net.
Socket Frame, 10¢ doz. net.
Butcher's, 10¢ doz. net.
Coffee Mills, Box and Side, new list Jan. 1, 1880, 10¢ doz. net.
Enterprise, 10¢ doz. net.

Cutlery. Walden Pocket, new list net.
Pennsylvania Knife Co., new list net.
Landers, Pratt & Clark, J. Russell & Co., new list net.
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American Parlor Door Hanger, 4¢ doz. net.

Drawing Knives.
Hart Mfg. Co., 75¢ doz. net.
Adjustable Handle, 75¢ doz. net.
Nicholson, 75¢ doz. net.
Butcher and Arrow, 75¢ doz. net.

Files.
Crown, 10¢ doz. net.
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Fluting Machines.
Eagle, 10¢ doz. net.
Eagle, 10¢ doz. net.
Crown, 10¢ doz. net.
Crown, 10¢ doz. net.

Flutes.
Eagle, 10¢ doz. net.
Eagle, 10¢ doz. net.
Crown, 10¢ doz. net.
Crown, 10¢ doz. net.

Hammer.
Yorker & Plumb, new list, 10¢ doz. net.
Yorker & Plumb, new list, 10¢ doz. net.
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Handles.
Diston Loop Handles Cross-Cut, 35¢ pair net.
Boynton Loop Handles Cross-Cut, 35¢ pair net.
Hatchets.
Yorker & Plumb, new list, 10¢ doz. net.

Hay and Straw Knives.
Electric, 10¢ doz. net.
Electric, 10¢ doz. net.
Electric, 10¢ doz. net.

Hinges.
Strap and T, 10¢ doz. net.
Globe, 10¢ doz. net.
Globe, 10¢ doz. net.

Horse Nails.
No. 2, 10¢ doz. net.
No. 3, 10¢ doz. net.
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Knives.
Parker's, 10¢ doz. net.
Parker's, 10¢ doz. net.
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Lanterns.
Buckley, 10¢ doz. net.
Buckley, 10¢ doz. net.
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8 x 1, 25¢ doz. net.
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8 x -2, 25¢ doz. net.
8 x -3, 25¢ doz. net.
8 x -4, 25¢ doz. net.

List of Extras.
8 x -5, 25¢ doz. net.
8 x -6, 25¢ doz. net.
8 x -7, 25¢ doz. net.

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8 x -10, 25¢ doz. net.

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8 x -48, 25¢ doz. net.
8 x -49, 25¢ doz. net.

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8 x -50, 25¢ doz. net.
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8 x -59, 25¢ doz. net.
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8 x -62, 25¢ doz. net.
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8 x -64, 25¢ doz. net.

List of Extras.
8 x -65, 25¢ doz. net.
8 x -66, 25¢ doz. net.
8 x -67, 25¢ doz. net.

List of Extras.
8 x -68, 25¢ doz. net.
8 x -69, 25¢ doz. net.
8 x -70, 25¢ doz. net.

Orange Mineral, True, in 100-lb. kegs, net 60 days.
Not subject either to rebate or freight equalization.
Terms: Note of acceptance at 60 days, or less 3% for cash if paid within 15 days from date of invoice, on lots of 500 lb. and over.
Freight equalized with all points where White Lead is made.

Miscellaneous Cast Steel.
Auger and Auger Bits, 5¢ doz. net.
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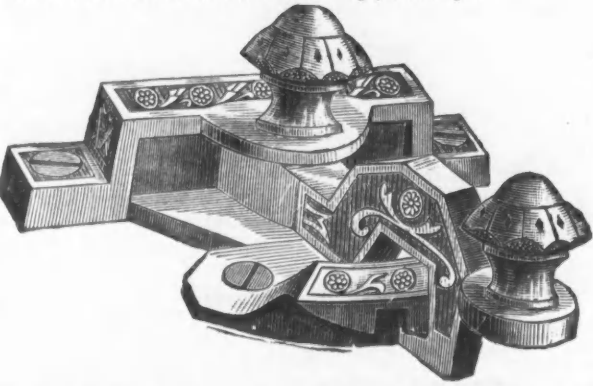
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Miscellaneous Cast Steel.
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For Net Bottom Prices see Page Adv. Iron Age, APRIL 15th.

BROUGHTON
BURGLAR-PROOF SASH LOCKS.
(Patented Oct. 7th, 1879.)
FOR NET BOTTOM PRICES SEE PAGE AD.
IN IRON AGE, APRIL 15th.



No. 210, Ornamental Iron, Iron Knob, fine finish, Etusca Bronze.....	80.50	No. 21, Ornamental Iron, Iron Knob, Nickel-plated, Crimson Old Gold Inlaid.....	1.85
No. 211, Ornamental Iron, Iron Knob, fine finish, Olympian Bronze.....	75	No. 218, Ornamental Iron, Iron Knob, Nickel-plated, Blue Old Gold Inlaid.....	1.90
No. 212, Ornamental Iron, Iron Knob, fine finish, Pompeii Bronze.....	85	No. 219, Ornamental Iron, Iron Knob, Nickel-plated, Green Old Gold Inlaid.....	1.95
No. 213, Ornamental Iron, Iron Knob, Nickel-plated.....	1.25	No. 220, Ornamental Iron, Iron Knob, Nickel-plated, Copper Old Gold Inlaid.....	2.00
No. 214, Ornamental Iron, Iron Knob, Nickel-plated, Rich Old Gold Inlaid.....	1.50	No. 221, Ornamental Iron, Iron Knob, Nickel-plated, Lemon Old Gold Inlaid.....	2.05
No. 215, Ornamental Iron, Iron Knob, Nickel-plated, Pale Old Gold Inlaid.....	1.60	No. 222, Ornamental Cast Brass, Polished and Lacquered.....	2.05
No. 216, Ornamental Iron, Iron Knob, Nickel-plated, Fire Old Gold Inlaid.....	1.75	No. 223, Ornamental Cast Brass, Nickel-plated.....	3.00

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Will extract the last drop of juice from large or small lemons in 4 seconds, and a child can easily operate it.

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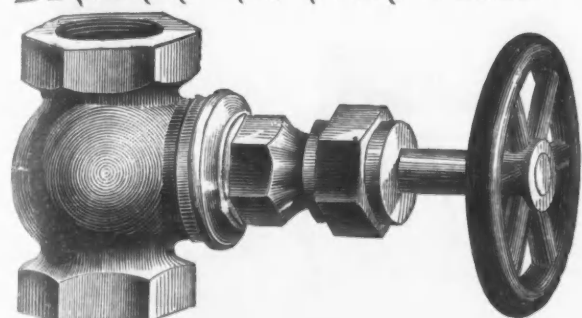
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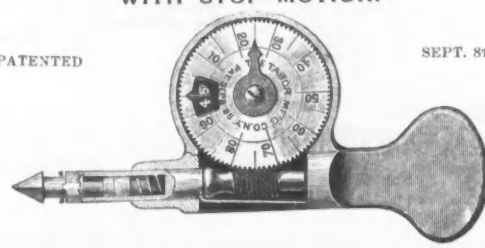
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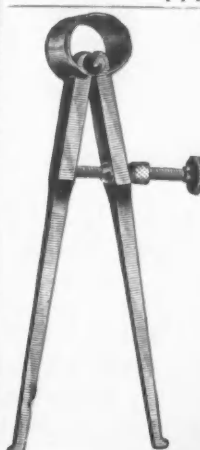
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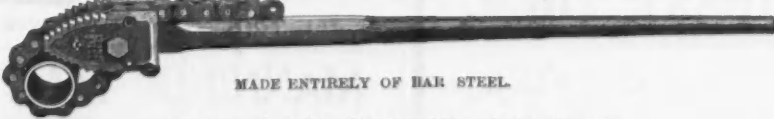


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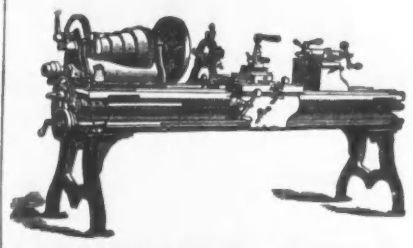
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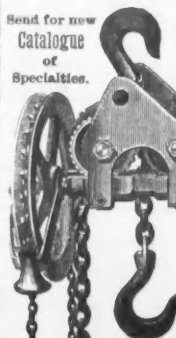
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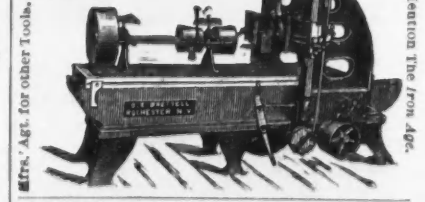
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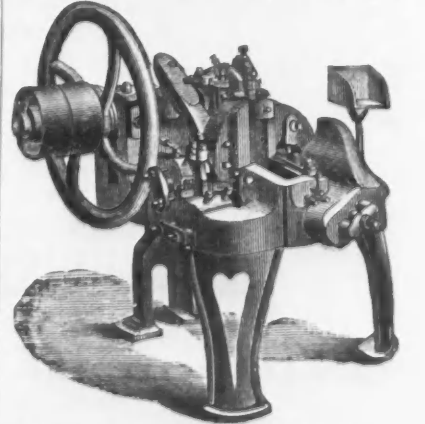
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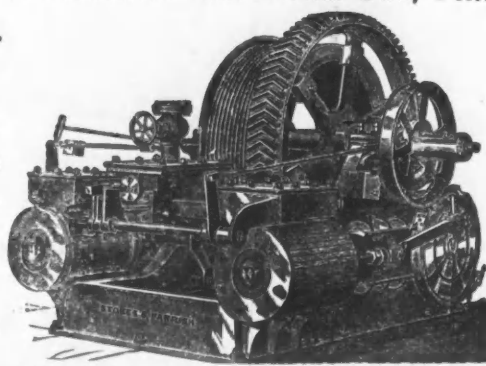
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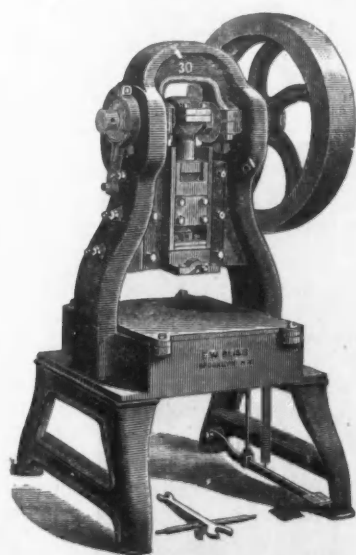
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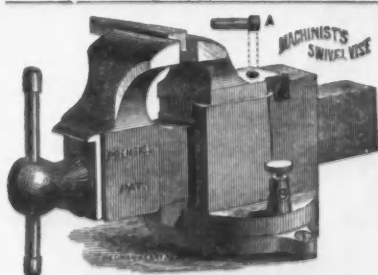
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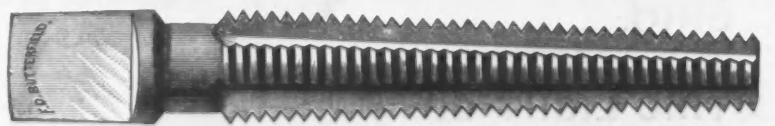
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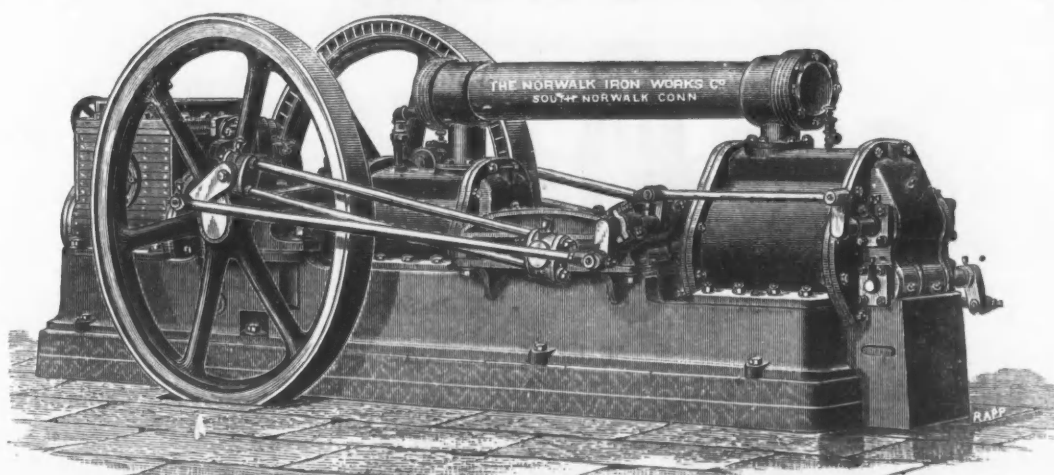
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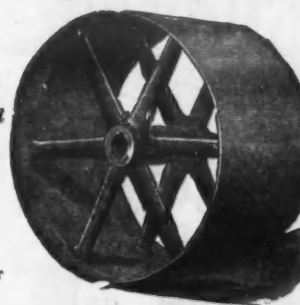
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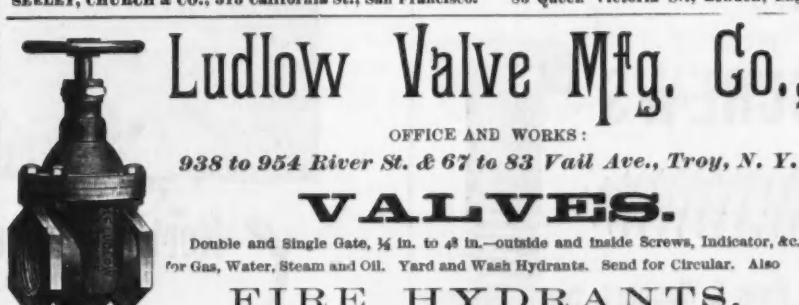
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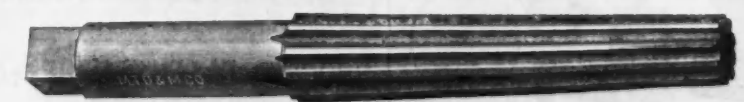
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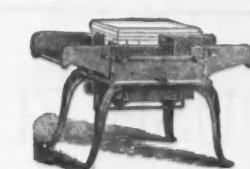
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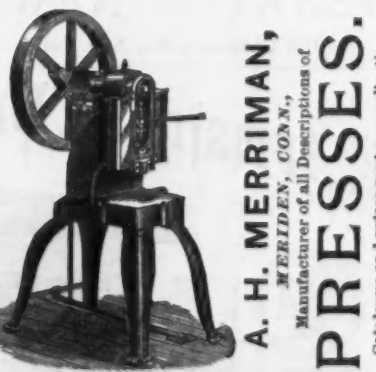


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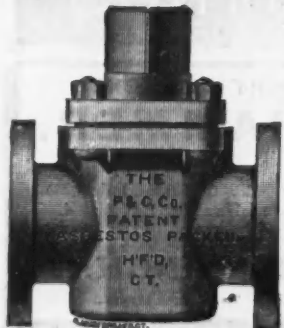
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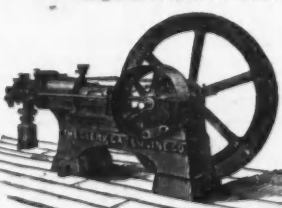
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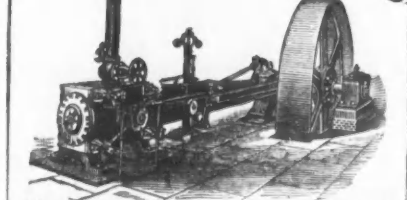
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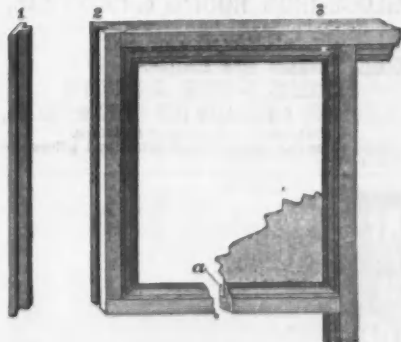
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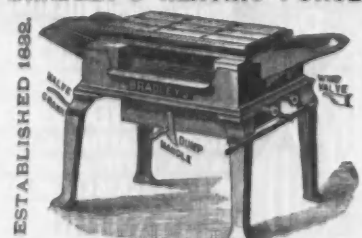
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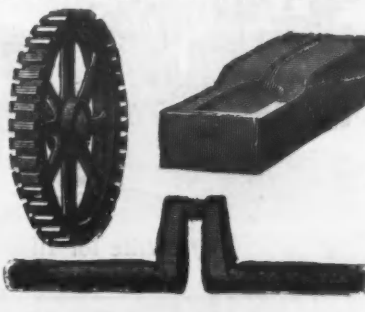
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